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per Govt. Code, § 6103)

Duane C. Miller, #57812  
Michael D. Axline, #229840  
A. Curtis Sawyer, Jr., #101324  
Tracey L. O'Reilly, #206230  
Evan Eickmeyer, #166652  
Daniel Boone, #148841  
Justin Massey, #229697  
Brian D. Shannon, #183422  
**MILLER, AXLINE & SAWYER**  
A Professional Corporation  
1050 Fulton Avenue, Suite 100  
Sacramento, CA 95825-4225  
Telephone: (916) 488-6688  
Facsimile: (916) 488-4288

Edmond M. Connor, #65515  
**CONNOR, FLETCHER & WILLIAMS LLP**  
2211 Michelson Drive, Suite 1100  
Irvine, CA 92612  
Telephone: (949) 622-2600  
Facsimile: (949) 622-2626

Attorneys for Plaintiff  
Orange County Water District

SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ORANGE

ORANGE COUNTY WATER DISTRICT,

Plaintiff,

v.

NORTHROP CORPORATION; NORTHROP  
GRUMMAN CORPORATION; AMERICAN  
ELECTRONICS, INC.; MAG AEROSPACE  
INDUSTRIES, INC.; GULTON  
INDUSTRIES, INC.; MARK IV  
INDUSTRIES, INC.; EDO CORPORATION;  
AEROJET-GENERAL CORPORATION;  
MOORE BUSINESS FORMS, INC.; AC  
PRODUCTS, INC.; FULLERTON  
MANUFACTURING COMPANY;  
FULLERTON BUSINESS PARK LLC; and  
DOES 1 through 400, inclusive,

Defendants.

AND RELATED CROSS ACTIONS.

Case No. 04CC00715

**PLAINTIFF ORANGE COUNTY WATER  
DISTRICT'S SUBMISSION OF  
PROPOSED (REVISED) STATEMENT  
OF DECISION**

Dept: CX104

Judge: Hon. Kim G. Dunning

Complaint Filed: December 17, 2004

Trial Date: February 10, 2012

1 Plaintiff Orange County Water District respectfully submits its (Revised) Proposed  
2 Statement of Decision, which is attached hereto as Exhibit 1.

3 Should it prove convenient to the Court, the District would be happy to provide the Court  
4 with the Proposed Statement of Decision in a word processing format computer file.

5 Respectfully submitted,

6 Dated: September 6, 2012

**MILLER, AXLINE & SAWYER**  
A Professional Corporation

8 By: 

**MICHAEL D. AXLINE**

Attorneys for Plaintiff  
Orange County Water District

11 Dated: September 6, 2012

**CONNOR, FLETCHER & WILLIAMS LLP**

13 By: 

**EDMOND M. CONNOR**

Attorneys for Plaintiff  
Orange County Water District

# Exhibit 1

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per Govt. Code, § 6103)

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**SUPERIOR COURT OF THE STATE OF CALIFORNIA**

**IN AND FOR THE COUNTY OF ORANGE**

ORANGE COUNTY WATER DISTRICT,	)	Case No. 04CC00715
	)	
Plaintiff,	)	<b>PLAINTIFF ORANGE COUNTY WATER</b>
	)	<b>DISTRICT'S PROPOSED STATEMENT</b>
v.	)	<b>OF DECISION</b>
	)	
NORTHROP CORPORATION; NORTHROP	)	Dept: CX104
GRUMMAN CORPORATION; AMERICAN	)	Judge: Hon. Kim G. Dunning
ELECTRONICS, INC.; MAG AEROSPACE	)	
INDUSTRIES, INC.; GULTON	)	Complaint Filed: December 17, 2004
INDUSTRIES, INC.; MARK IV	)	Trial Date: February 10, 2012
INDUSTRIES, INC; EDO CORPORATION;	)	
AEROJET-GENERAL CORPORATION;	)	
MOORE BUSINESS FORMS, INC.; AC	)	
PRODUCTS, INC.; FULLERTON	)	
MANUFACTURING COMPANY;	)	
FULLERTON BUSINESS PARK LLC; and	)	
DOES 1 through 400, inclusive,	)	
	)	
Defendants.	)	
	)	
AND RELATED CROSS ACTIONS.	)	
	)	

1 **I. INTRODUCTION AND BACKGROUND FACTS**

2 This case was brought by the Orange County Water District (District) to recover the costs  
3 of the North Basin Groundwater Protection Project (NBGPP). The NBGPP will remove volatile  
4 organic chemicals (VOC's) from the groundwater beneath an industrial area on the border  
5 between the cities of Anaheim and Fullerton, and prevent those VOC's from spreading further  
6 into the aquifers that the District is charged with protecting. (Trial Exhibit [TE] 708  
7 [Geologist's/Engineer's Report] at 1-1 through 1-6.) The NBGPP uses extraction wells to  
8 remove contaminated groundwater, pump the contaminated water to a centralized treatment  
9 facility for contaminant removal, then re-inject the treated water upgradient of the extraction  
10 wells, to form a continuous treatment cycle. (*Id.*)

11 The District was established by the Orange County Water District Act (the Act) in 1933.  
12 (Wat. Code Appen., § 40-1.) The Act authorizes the District "to construct . . . and to operate and  
13 maintain . . . facilities . . . to augment and protect the quality of the common water supplies of the  
14 District . . . ." (Wat. Code Appen., § 40-2, subd. (5).) The Act empowers the District to  
15 "manag[e], replenish[], regulat[e], and protect[] the groundwater supplies within the District . . .  
16 ." (Wat. Code Appen., § 40-2, subd. (6).) The Act further empowers the District to "[t]ransport,  
17 reclaim, purify, treat, inject, extract, or otherwise manage and control water for the beneficial use  
18 of persons or property within the district and to improve and protect the quality of the  
19 groundwater supplies within the district." (Wat. Code Appen., § 40-2, subd. (6)(j).) The Act  
20 provides the District with the power necessary "to provide for the protection and enhancement of  
21 the environment within and outside the district in connection with the water activities of the  
22 district." (Wat. Code Appen., § 40-2, subd. (7).)

23 Water Code Appendix section 40-2, subdivision (9), empowers the District, in order to  
24 carry out the purposes of the Act, to "to assume the costs and expenses of any and all actions and  
25 proceeding now or hereafter begun to prevent . . . diminution of the quantity or pollution or  
26 contamination of the water supply of the district . . . ." (See *In re Methyl Tertiary Butyl Ether*  
27 (*MTBE*) *Products Liability Litigation* (S.D.N.Y. 2006) 475 F.Supp.2d 286, 288 ["OCWD is  
28 statutorily authorized to 'prevent interference [with] . . . [or] diminution . . . [or] pollution or

1 contamination' of the water supply within the district"]; see also *Orange County Water Dist. v.*  
2 *City of Riverside* (1959) 173 Cal. App.2d 137, 166-167 [District has standing to seek declaratory  
3 relief under Code Civ. Proc., § 1060].) The District is also empowered to act jointly with other  
4 federal and state agencies to carry out the purposes of the Act. (Wat. Code Appen., § 40-2, subd.  
5 (11).)

6 Water Code Appendix section 40-8 authorizes the District to investigate contamination  
7 and to perform any necessary remedial work to "prevent, abate or contain any threatened or  
8 existing contamination of, or pollution to, the surface or groundwaters of the district." (Wat.  
9 Code Appen., § 40-8, subd. (b).) The Act provides: "The district may perform the work itself,  
10 by contract, or by or in cooperation with any other governmental agency." (*Ibid.*) The Act  
11 imposes liability for the costs of such remedial work on the person causing, or threatening to  
12 cause, the contamination, and creates a presumption that the remedial work was necessary and  
13 the costs reasonable. (Wat. Code Appen., § 40-8, subd. (c); see *Orange County Water Dist. v.*  
14 *Arnold Engineering Co.* (2011) 196 Cal. App. 4th 1110, 1126 ["[B]oth the Water Code and the  
15 Health and Safety Code authorize the Water District to bring an action in its own name to recover  
16 investigation and remediation costs it incurred without regard to the particular interest the Water  
17 District holds on the contaminated groundwater"].) Such liability extends both to remediation  
18 costs the District has incurred, and to costs "it will incur in the future." (*Ibid.*)

19 The District has extensive prior experience with design and installation of remediation  
20 systems to treat off-site contamination and protect groundwater for domestic water supplies  
21 within the District's service area. The District undertook several large scale projects to remove  
22 contaminants from groundwater (the Marine Base solvents, Tustin Desalter Project, the Tustin  
23 Nitrate Removal Project, and the Irvine Desalter Project) and to provide high-quality recharge  
24 water (Water Factory 21 and the Groundwater Replenishment System) prior to undertaking the  
25 NBGPP. (March 3, 2012, Trial Testimony [TT] at 379:6 - 380:1 [Water Factory 21]; 382:3-6  
26 [Groundwater Replenishment System] and 410:5-22 [solvents and desalters].) As the court  
27 found in *In re Methyl Tertiary Butyl Ether (MTBE) Products Liability Litigation* (S.D.N.Y. Mar.  
28 7, 2007, No. 1:00-1898, MDL 1358 (SAS), M21-88) 2007 WL 700819, at page \*4: "OCWD is

1 first and foremost a state environmental agency that may well have the best knowledge of what  
2 efforts are most likely to remediate . . . plumes in its service area.” The “pump and treat” method  
3 of remediating groundwater contamination selected by the District for the NBGPP is a reliable  
4 and tested method of remediating groundwater contamination. (May 7, 2012, TT 2301:6 -  
5 2303:15 [testimony of Robert Greenwald].)

6 Defendants are businesses alleged to have released VOC’s that have contaminated, and  
7 are threatening to contaminate, groundwater in the area of the NBGPP. Defendants have filed  
8 various cross-claims against numerous third party defendants for contribution and indemnity.  
9 Cross claims against third parties have been severed and will be tried at a later date.

10 The District submitted extensive evidence that VOC’s were released at each defendant’s  
11 site. Defendants do not contest that hazardous substances were released at the sites where  
12 defendants are associated. Defendants dispute the amount and type of hazardous substances  
13 released, dispute whether the hazardous substances migrated to groundwater, and in some  
14 instances dispute whether they are responsible for the release. The District has conducted its own  
15 sampling, and installed monitoring wells, to better understand the nature, scope, and sources of  
16 VOC contamination in the project area.

17 The Court previously bifurcated the case into a bench trial on statutory claims and a jury  
18 trial on common law claims. The statutory claims are based on the Orange County Water  
19 District Act (Wat. Code Appen., §§ 40-1 through 40-78), the Carpenter-Presley-Tanner  
20 Hazardous Substances Account Act (HSAA) (Health & Saf. Code, §§ 25300-25395.45), and the  
21 Declaratory Relief Act (Code Civ. Proc., § 1060).

22 The bench trial began February 10, 2012, and ended August 27, 2012. The jury trial and  
23 the subsequent trial on cross claims against third parties have not yet been scheduled. During the  
24 bench trial, the Court received evidence and heard argument regarding the District’s statutory  
25 claims. Based upon that evidence and argument, the Court makes the findings and conclusions  
26 set forth herein.

## 27 **II. ORANGE COUNTY WATER DISTRICT ACT CLAIMS**

28 Section 40-2, subdivision (9), of the Act authorizes the District to commence and

1 maintain any and all actions to prevent pollution or contamination of the water supply of the  
2 District. Section 40-8, subdivision (c), of the Act (Wat. Code Appen., § 40-8, subd. (c)) (Section  
3 40-8(c)) provides a cause of action and remedies for the District to recover the costs of any  
4 remedial actions it elects to undertake.

5 Section 40-8(c) provides:

6 If, pursuant to subdivision (b), the contamination or pollution is cleaned up or contained,  
7 the effects thereof abated, or in the case of threatened contamination or pollution, other  
8 necessary remedial action is taken, the person causing or threatening to cause that  
9 contamination or pollution shall be liable to the district to the extent of the reasonable  
10 costs actually incurred in cleaning up or containing the contamination or pollution,  
11 abating the effects of the contamination or pollution, or taking other remedial action. The  
amount of these costs, together with court costs and reasonable attorney fees, shall be  
recoverable in a civil action by, and paid to, the district. In any such action, the necessity  
for the cleanup, containment, abatement, or remedial work, and the reasonableness of the  
costs incurred therewith, shall be presumed, and the defendant shall have the burden of  
proving that the work was not necessary, and the costs not reasonable.

12 (Section 40-8(c).) Thus when the District performs “remedial action” to address pollution or  
13 “threatened pollution,” the parties causing the pollution or threatened pollution “shall be liable”  
14 to the District for its costs in undertaking such remedial action.

15 Defendants do not dispute that the NBGPP will “prevent, abate or contain . . . threatened  
16 or existing contamination of, or pollution to, the . . . groundwater of the district.”

17 In interpreting Section 40-8(c), the Court is mindful that “statutes which are *in pari*  
18 *materia* should be read together and harmonized if possible.” (*Johnston v. Sonoma County*  
19 *Agricultural Preservation & Open Space Dist.* (2002) 100 Cal.App.4th 973, 986 [citations  
20 omitted] [quoting *Environmental Protection Information Center, Inc. v. Johnson* (1985) 170  
21 Cal.App.3d 604, 615].) In particular, specific environmental statutory schemes should be read  
22 consistently with “general” statutory schemes so that they are harmonized. (*Environmental*  
23 *Protection Information Center, Inc., supra*, 170 Cal.App.3d at p. 615; see also *Natural*  
24 *Resources Defense Council, Inc. v. Arcata Nat. Corp.* (1976) 59 Cal.App.3d 959, 965.)  
25 Defendants’ evidence focused on establishing that they did not “cause or threaten to cause”  
26 contamination of groundwater, and on overcoming the twin presumptions in Section 40-8(c) that  
27 the NBGPP is necessary and the costs of the NBGPP are reasonable.  
28

1 To establish causation under the Act, the District must show that defendants' conduct was  
2 a "substantial factor" in bringing about the relevant harm (here, actual or threatened groundwater  
3 contamination). (*Mitchell v. Gonzales* (1991) 54 Cal.3d 1041, 1052, 1053.) A substantial factor  
4 refers to any conduct that played a role that was more than "infinitesimal" or "theoretical."  
5 (*Espinosa v. Little Company of Mary Hospital* (1995) 31 Cal.App.4th 1304, 1314.)

6 As the court explained in *Castaic Lake Water Agency v. Whittaker Corp.* (C.D. Cal.  
7 2003) 272 F.Supp.2d 1053 (*Castaic Lake Water Agency*), in CERCLA cases:

8 The plaintiff must prove only that contaminants which were once in the custody of the  
9 defendant could have traveled onto the plaintiff's land, and that subsequent contaminants  
10 (chemically similar to the contaminants once existing in defendant's custody) on the  
11 plaintiff's land caused the plaintiff to incur cleanup costs. The plaintiff need not produce  
any evidence that the contaminants did flow onto its land from the defendant's land.  
Rather, once plaintiff has proven a *prima facie* case, the burden of proof falls on the  
defendant to *disprove causation*.

12 (*Id.* at p. 1065 [quoting *Westfarm Assoc. v. Washington Suburban Sanitary Com'n* (4th Cir.  
13 1995) 66 F.3d 669, 681] [affirming summary judgment for plaintiff] [emphasis added by *Castaic*  
14 *Lake Water Agency* Court].) Because the remedial provisions of the Orange County Water  
15 District Act, like the HSAA, are *in pari materia* with CERCLA, the Court will apply the same  
16 causation standard to the District's claims under the Act that courts apply to CERCLA claims.

17 The Orange County Water District Act empowers the District to abate and remediate both  
18 current and "threatened" contamination of groundwater. (Wat. Code Appen., § 40-8, subd. (b).)  
19 The Legislature envisioned that the District would take a proactive role to "commence . . . any  
20 and all actions and proceedings . . . to *prevent* . . . pollution or contamination of the water supply  
21 of the district . . ." (Wat. Code Appen., § 40-2, subd. (9) (emphasis added.) Under the Act, the  
22 District's causation evidence must establish that defendants' release of contaminants either  
23 contaminated groundwater or "threatens" to contaminate groundwater and that the District has  
24 undertaken action to "prevent" further contamination of the District's water supply.

25 The causation evidence presented at trial by the District with respect to each defendant  
26 was extensive, and is summarized in appendices A-G to this Statement. The evidence establishes  
27 that each defendant was a "substantial factor" in causing contamination that necessitated the  
28 NBGPP.

1 The District is entitled to a presumption under the Act that the NBGPP was both  
2 necessary and reasonable. (Section 40-8(c).) The District introduced extensive evidence to  
3 buttress these presumptions.

#### 4 **Need For North Basin Groundwater Protection Project**

5 The need for the NBGPP is discussed extensively in the Geologist's/Engineer's Report  
6 for the Project. (TE 708, pp. 1-1 to 1-2, 2-2 to 2-4.) As explained in that Report:

7 Groundwater contamination originating in the shallow aquifer continues to  
8 migrate both laterally and vertically in response to hydraulic gradients in the area.  
9 Both shallow and deeper monitoring wells along the downgradient edges of the  
10 VOC plumes exhibit significantly increasing VOC concentrations, demonstrating  
11 the plumes continue to migrate. These groundwater monitoring data show that  
12 downgradient production wells operated by the cities of Fullerton and Anaheim  
are threatened if the VOC-impacted groundwater continues to migrate unabated  
into the deeper aquifers where the bulk of groundwater production takes place.  
Also, continued migration of contamination will adversely impact the water  
producer's ability to utilize contaminated parts of the aquifer.

13 (TE 708 at 1-1.) The need for the Project is also discussed in numerous documents leading up to  
14 the Geologist's/Engineer's Report. (TE. 11771; 15855; 11063; 15012 and 779a. *See also* March  
15 27, 2012, TT at 413:22 - 414:2.) The District's Assistant General Manager Mr. Wehner testified  
16 that the Board approved the NBGPP in order to remediate contamination in the Anaheim  
17 Fullerton Area. (March 27, 2012, TT at 411:15-19.) The District's chief hydrogeologist, Roy  
18 Herndon, explained: "Doing the math, it's \$120 million benefit per year to have this groundwater  
19 basin without requiring treatment versus buying imported water." (July 31, 2012, TT at 5763:16-  
20 18.)

21 The District's expert Dr. Fogg testified that at least 7.5 billion gallons of water in the  
22 Project area is contaminated above the MCL for PCE. (June 18, 2012, Trial Transcript [TT] at  
23 3746:2-6.) Dr. Fogg testified the maximum concentration of PCE found within the project area  
24 is 173 ppb, and the equivalent amount of water contaminated above MCLs in acre feet is "at least  
25 23,000 acre feet." (TT at 3746:7-16.) Dr. Fogg testified with respect to TCE that: "7.4 billion  
26 gallons [of water is] contaminated above the MCL, at least. At least 22,000 acre feet above the  
27 MCL. And a maximum concentration of 1,778" ppb. (TT at 3746:20-26.) For 1,1-DCE, Dr.  
28 Fogg testified: "3.4 billion gallons, at least, above the MCL. 10,500 acre feet above the MCL.

1 And maximum concentration of 186 ppb.” (TT at 3747:2-7.) For 1,4-Dioxane, Dr. Fogg  
2 testified: “At least 644 million gallons. At least 1,950 acre feet. And a maximum concentration  
3 of 125 ppb.” (TT at 3747:8-11.)

4 Dr. Fogg testified with respect to the current physical dimensions of the contaminated  
5 area that: “It’s at least 4 miles long, a little bit less than a mile wide, and vertically it’s . . . it’s  
6 hundreds of feet vertically.” (TT at 3759:11-19.) *See also* Testimony of Philip Miller; July 23,  
7 2012, at TT 5072:19-23 [plume is 4 miles by 1 mile] ). As Dr. Fogg also testified, based on data  
8 from monitoring wells: “concentrations of several of the contaminants of concern have been  
9 rising through time, indicating that that location (well FM-4A, downgradient) is receiving mass  
10 from upgradient, which also means that the plume is continuing to move to the west.” (TT at  
11 3765:3-23.). 1,1-DCE plotted through time, “from 1992 up to 2011 and it shows a general  
12 increasing trend” of contamination levels. (TT at 3767:20-21.) “PCE, also shows a general  
13 increasing trend” of contamination levels (TT at 3767:22-23). TCE “also shows a general  
14 increasing trend” of contamination levels (TT at 3767:24-25). “So there is mass moving through  
15 this region from upgradient.” (TT at 3769:15-16).

16 Dr. Fogg’s opinions regarding the mass in the groundwater are conservative because he  
17 did not attempt to account for VOCs in the soil that are still migrating into groundwater. As Dr.  
18 Fogg testified: “I know from my studies of this site and other sites that there is contaminant mass  
19 above the water table in the vadose zone or the unsaturated zone, and it is migrating downward  
20 into the system due to the behavior of these chemicals in the unsaturated zone and a variety of  
21 other fundamentals about how they migrate.” (TT at 3782:10-15) He further explained:  
22 “[A]nother way in which my mass estimates are low. I’m neglecting the mass in the perched  
23 zone or the unsaturated zone.” (TT at 3782: 23-25.)

24 Dr. Fogg “[m]odeled path lines of PCE in the shallow aquifer from 1999 to 2041 with the  
25 extraction wells off. And it basically shows the groundwater and the PCE traversing the project  
26 area from roughly east to west . . . basically these path lines indicate migration distances on the  
27 order of 20,000 feet.” (TT at 3771:21 - 3772:1.) It’s moving about 1,000 feet a year, “in that  
28 area, yes. That’s really fast.” (TT at 3772:20-22.)

1 Defendants' principal evidence regarding the necessity of the NBGPP came in the form of  
2 testimony from Mr. Lambie and Dr. Larsen, discussed below with respect to the reasonableness  
3 of the Project.

#### 4 **Reasonableness Of The North Basin Groundwater Protection Project**

5 The District's evidence also supported the statutory presumption of reasonableness of the  
6 costs of the NBGPP. Robert Greenwald, a District expert, testified that he has evaluated  
7 numerous remediation systems for government agencies, including EPA, the Department of  
8 Defense, and the Department of Energy. (May 7, 2012, TT at 2301:6-16.) He also testified that  
9 "in terms of remedy type, they were largely pump and treat systems. Not all of them were pump  
10 and treat, but I would say the vast majority were pump and treat." (TT at 2303:3-6.) The  
11 reasonableness of the NBGPP and its associated costs was discussed in the  
12 Geologist's/Engineer's Report for the Project. TE 708, pp. 1-1 to 1-2, 2-2 to 2-4. The extraction  
13 wells were located to contain the VOCs at 5 to 10 times MCL and NL (notification level)  
14 concentrations. (May 3, 2012, TT at 2094:17-21. The most cost effective to contain the plumes  
15 is by locating the extraction wells at the leading edge of the plumes, which is what the District  
16 has done. (TT at 2094:22 - 2095:2.) As noted above, the "pump and treat" method adopted by  
17 the NBGPP is a common, reliable and tested method of treating groundwater contamination. (TT  
18 at 2303:3-6; *See also* July 26, 2012, TT at 5149:20 - 5151:11 [AC Products uses pump and  
19 treat system to remediate VOCs in Project area].)

20 Defendants' evidence was insufficient to overcome the presumption of reasonableness  
21 established by the Act and the District's affirmative evidence of reasonableness. Northrop's  
22 expert Glen Tofani testified regarding a re-circulation well installed at the Northrop Y-12 facility  
23 to remediate contamination at that location. (July 26, 2012, TT at 5247:1 - 5272:15.) Mr.  
24 Tofani, however, did not offer an opinion about off-site treatment of VOCs that had already  
25 migrated away from the Northrop properties. (TT at 5364:16-20.)

26 Mr. Lambie and Dr. Larsen were the only defense experts to recommend an alternative to  
27 the NBGPP, and their recommended alternatives were to do nothing and let the VOCs "naturally  
28 attenuate." (August 9, 2012, TT at 6462:15-25 [Lambie]; August 23, 2012, TT at 7080:10-15

1 [Larsen].) .) Mr. Lambie explained a “spatial analysis” he used to determine that the VOCs  
2 would biodegrade in the subsurface (TT at 6481:4-7) - a conclusion that is contrary to the  
3 testimony of other defense experts, including Northrop expert Mr. Tofani. (*See* Testimony of  
4 Glenn Tofani, July 7, 2012, at TT 5402:4-9 [“Throughout much of the Basin, the oxygen levels  
5 are moderately high to high, and much of the Basin is not anaerobic. Q. Which would mean that  
6 chemicals such as TCE do not degrade quickly? A. Correct.”) Dr. Larsen, for his part, relied in  
7 largely part on a model used by the District’s expert Dr. Fogg, but as explained below Dr. Larsen  
8 made a fundamental error in his use of that model.

9 As Dr. Fogg testified, Mr. Lambie “cherry picked” certain dates for his spatial analysis to  
10 find a correlation that was consistent with Mr. Lambie’s conclusion that VOCs were naturally  
11 biodegrading. (August 27, 2012, TT at 7366:25 - 7367:2.) Dr. Fogg also testified: “[F]rom 2005  
12 up to 2011, for most of that time, the highest concentration is at the well farthest downgradient,  
13 which would be the opposite of what you would expect if you’re seeing biodegradation or if it’s  
14 evident in the data.” (TT at 7367:3-7.) As Dr. Fogg explained: “The methods that are used [to  
15 infer biodegradation from spatial trends] depend on models that represent constant conditions.  
16 So that means the groundwater is constant in rate of flow, and the concentrations that are being  
17 measured are stable, not changing, or, if anything, just decreasing exponentially. And also  
18 decreasing downgradient. These data don’t meet any of those requirements for applying any  
19 method to field data on concentration to infer biodegradation.” (TT at 7371:26 - 7372:7.) As Mr.  
20 Lambie conceded, the selection of the time period to examine influences the trend result  
21 produced: “But yes, I think if you look at a longer period of record, you will find a difference in  
22 trends over time.” (TT at 6628:9-11).

23 Dr. Fogg also testified, consistent with the testimony of many of defendants’ own experts,  
24 that groundwater flow direction in the area of the NBGPP varies over time. “The groundwater  
25 flow direction is not a straight line, first of all, aligned with these three wells at any given point in  
26 time. . . . In this case, that kind of wobble in the groundwater flow direction is enough to send the  
27 plume’s center line hundreds to thousands of feet away from the downgradient well.” (TT at  
28 7375:16 - 7376:2. *See also* Testimony of Mr. Tofani, TT at 5247:9-14 [groundwater flow

1 direction “toggles or wiggles back and forth.”].)

2 Dr. Fogg made the even more important point that assumptions that biodegradation will  
3 solve the VOC problem in the Project area are inconsistent with reality. While Dr. Fogg  
4 acknowledged the detections of CIS-2,2-DCE “a degradation product of PCE and TCE” (TT at  
5 3874:1) in the Project area, he did not make broad assumptions based on these detections, but  
6 rather put them in the context of the entire area. He testified: “[Y]es, there appear to be pocket  
7 of degradation of PCE and TCE, but I do not see widespread or significant evidence of  
8 degradation at a significant rate . . . there is – the evidence for biodegradation controlling these  
9 plumes is extraordinarily weak. My opinion is that there’s not enough biodegradation to limit the  
10 contamination or to protect the groundwater from the contamination. And if there had been  
11 enough biodegradation to control the plumes or protect the groundwater, there would not be  
12 evidence of plume growth.” (TT at 3874:20 - 3875-4).

13 With respect to the condition of the subsurface in the Project area and whether it was  
14 conducive to biodegradation, Dr. Fogg testified emphatically that was not the case. As he  
15 explained: [I]n this aquifer, the conditions are not ripe for biodegradation of those compounds  
16 because of the relatively high dissolved oxygen content. So scientifically, we do not expect to  
17 see much biodegradation of PCE and TCE in the system. (TT at 3876:1-7). He testified even  
18 more specifically: “In general, the concentrations [in the Project area] are much above 1  
19 milligram per liter dissolved oxygen. And many of them are on the order of 5 to 8, which would  
20 be considered aerobic and not conducive to biodegradation of PCE and TCE.” (TT at 3876:16-  
21 21). Dr. Fogg testified that in order to expect significant reductive dechlorination of PCE and  
22 TCE, there would have to be “[m]uch lower dissolved oxygen levels. Even that does not  
23 guarantee that those reactions will happen. But the reactions are more likely to happen at a  
24 higher rate if the dissolved oxygen levels are below 1. In this system, they are pretty consistently  
25 above 1.” (TT at 3876:16-26; 3877:1-2).

26 Defendants’ own experts’ testimony was inconsistent with the conclusions asserted by  
27 Mr. Lambie with respect to biodegradation. As noted above, for example, Northrop’s own expert  
28 Mr. Tofani testified that there were localized exceptions, but that most of the Basin was

1 anaerobic and would therefore not be conducive to biodegradation. (TT at 5402:4-9.) CBS's  
2 expert Dr. Stephens similarly testified, based upon actual field conditions (as opposed to a  
3 "spatial analysis"): "Q. Is it also your opinion that PCE in the soil at that location is not likely to  
4 biodegrade? A. Based on the conditions we have seen from our investigation, that's correct."  
5 (August 3, 2012, TT at 6103:23-26.)

6 In fact, Dr. Fogg testified that one of the very conditions emphasized by defendants -  
7 nitrate levels - inhibits reductive dichlorination. He testified: "The reductive dechlorination also  
8 is inhibited by elevated nitrate, and in this system, there is - the nitrates are fairly consistently  
9 elevated to the point that reductive dechlorination of PCE and TCE would be inhibited and you  
10 wouldn't expect those reactions or that degradation to proceed at appreciable rates." (TT at  
11 3877:12-17).

12 Mr. Lambie's testimony is also inconsistent with Northrop's own actions. Northrop's  
13 expert Glen Tofani testified extensively about Northrop's recirculation well installed for the  
14 purposes of treating VOCs at Northrop's Y-12 site. (July 26, 2012, TT at 5247:8-11.). If natural  
15 attenuation was capable of remediating contamination in this area, there would be no need for  
16 Northrop to operate its re-circulation well.

17 Dr. Larsen testified: "the proposed OCWD Treatment system, in my opinion, isn't really  
18 necessary . . . when you consider the conditions in the deeper aquifer, and especially the  
19 conditions in the areas around some of the major deep production wells for the city of Anaheim  
20 and the City of Fullerton. . . ." (August 23, 2012, TT at 7080:10-15.) Dr. Larsen conceded,  
21 however: "[B]asically the process is one whereby some of the VOC contamination of the shallow  
22 zone throughout this area can tend to migrate into the deeper zone." (TT at 7087:14-16.) He  
23 also acknowledged: "Now as you examine the data . . . what I see in the information is sort of  
24 typical of what we see in other contaminated areas where, for example, in the deep zone,  
25 contamination historically moved down in there and has moved off toward the Southwest." (TT  
26 at 7088:5-10.)

27 Dr. Larsen relied significantly upon Dr. Fogg's model to form his opinion. (TT at  
28 7105:1-5 ["Dr. Fogg had an analysis where he calculated the impacts going out into the future if

1 the system were operated. And Mr. Lambie had a calculation going out into the future if the  
2 system were not operated. So I could use those two results to make comparisons.”].)

3 As Dr. Fogg testified in rebuttal, however, Dr. Larsen made a fundamental error in using  
4 Dr. Fogg’s model. As Dr. Fogg explained: “Dr. Larsen used - when he came up with the  
5 boundary conditions for his local models - and boundary conditions just dictate how and where  
6 and at what rate water enters and leaves the model - he used boundary conditions from my runs  
7 where I had wells running.” (TT at 7312:19-24.) It is hard to overstate the significance of this  
8 error or the lack of understanding of models demonstrated by the error. As Dr. Fogg explained:  
9 “This results in his [Dr. Larsen’s] model moving mass out of the model, not to wells, but out of  
10 the boundaries inappropriately. So it results in the appearance of mass being removed or -  
11 despite the extraction well network not being there in his model, but it’s an artifact of how he  
12 implemented the model.” (TT at 7313:1-7.) Dr. Larsen simply failed to follow the procedures in  
13 the established literature for running the model. (TT at 7315:4 - 7316:8. *See generally* Fogg  
14 Testimony at 7312:1 -7319:25.)

15 The testimony of both Dr. Larsen and Mr. Lambie are also inconsistent with reality. As  
16 explained by the District’s chief hydrogeologist Roy Herndon, production well A-47 is a large  
17 and deep production well that pumps 25 percent more water than the entire NBGPP will pump.  
18 (August 24, 2012, TT at 7230:22-23; 7232:12-13.) The leading edge of one of the plumes  
19 addressed by the NBGPP has already entered the deep aquifer in the vicinity of Well A-47. (TT  
20 at 7235:7-18.)

21 The District has incurred significant costs in developing the NBGPP. It has expended  
22 \$2,701,620.32 on extraction and monitoring wells and associated projects. This includes  
23 \$1,300,192.26 on NBGPP extraction wells (TE 938, p. 2) and \$525,313.06 on projects associated  
24 with extraction wells. (*Id.*) The District also expended \$594,183 on NBGPP monitoring wells  
25 (TE 938, p. 1), \$99,248 on exploratory boreholes (*id.*), \$182,684 on projects associated with  
26 monitoring wells. (*Id.*) (*See also* June 29, 2012, TT at 4354:1-3.) In addition, the District has  
27 expended \$407,000 on designing the pipeline to transport contaminated water from the extraction  
28 wells to the treatment plant (TT at 4365:23-26; *See also* TE 983b.) The District also expended

1 \$233,069.48 to develop alternatives and for conceptual design work (TT at 4389:8-15 and  
2 4391:21-25) and \$400,000 for the NBGPP environmental impact report. (TT at 4411:16-21.)<sup>1</sup>  
3 In total, the District submitted evidence that it expended at least \$3,741,689.80 on the NBGPP  
4 prior to the start of trial.

5 As explained in Part IV, *post*, the Declaratory Relief Act (Code Civ. Proc., § 1060)  
6 provides for declaring the rights and responsibilities of the parties, and the Court is empowered  
7 to fashion appropriate post-judgment procedures to govern the District's recovery of additional  
8 remediation costs, and may retain jurisdiction to enforce such procedures.

9 Pursuant to the Orange County Water District Act, Water Code Appendix 40-8(c), the  
10 Court finds that the District is entitled to judgment awarding: (a) damages and costs the District  
11 has incurred to date in connection with the NBGPP; and (b) declaratory relief holding  
12 defendants liable for damages and costs that the District will incur in the future in connection  
13 with the NBGPP, as more specifically set out in Part IV, *post*.

### 14 **III. HSAA CLAIMS**

15 The District's complaint includes a claim for recovery under the HSAA. Pursuant to  
16 Health and Safety Code section 25363, subdivision (e), the District notified the Director of the  
17 Department of Toxic Substances Control that the District was seeking response costs pursuant to  
18 the HSAA, and provided the Director with a copy of the complaint. (TE 780.)

19 The HSAA, which adopts the scope of liability of CERCLA. (See *Nixon-Egli Equip. Co.*  
20 *v. John A. Alexander Co.* (C.D. Cal. 1996) 949 F.Supp. 1435, 1441, fn. 5.) *See also Ameron v.*  
21 *Insurance Co. Of Pennsylvania* (2011) 50 Cal.4th 1370, 1379 (HSAA is "California's version of  
22 [CERCLA].") In fact, the HSAA defines parties liable under the Act by cross-reference to  
23 section 107(a) of CERCLA. (See Health & Saf. Code, § 25323.5, subd. (a)(1) ["'Responsible  
24 party' or 'liable person,' for the purposes of this chapter, means those persons described in  
25

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26  
27 <sup>1</sup> Although some costs exhibits were excluded with respect to Alcoa, TE. 938B and  
28 accompanying testimony regarding project design costs, as well as testimony regarding costs  
development of alternatives, project conceptual design and costs associated with the  
environmental impact report were admitted with respect to all parties, including Alcoa.

1 Section 107(a) of the federal act (42 U.S.C. Sec. 9607(a))”].) “CERCLA is a strict liability  
2 statute, and liability can attach even when the generator has no idea how its waste came to be  
3 located at the facility from which there was a release.” (*Pakootas v. Teck Cominco Metals* (9th  
4 Cir. 2006) 452 F.3d 1066, 1078, fn. 18.)

5 Section 107(a) of CERCLA provides, in relevant part:

6 Notwithstanding any other provision or rule of law, and subject only to the defenses set  
7 forth in subsection (b) of this section – (1) the owner and operator of . . . a facility, (2) any  
8 person who at the time of disposal of any hazardous substance owned or operated any  
9 facility at which such hazardous substances were disposed of . . . shall be liable for – . . .  
(B) any other necessary costs of response incurred by any other person consistent with the  
national contingency plan . . . .

10 A “facility” is defined in CERCLA as a “site or area where a hazardous substance has  
11 been deposited, stored, disposed of, or placed, or otherwise come to be located.” (42 U.S.C. §  
12 9601(9).)

13 To establish liability under CERCLA § 107(a), a plaintiff must establish: (1) the  
14 chemicals at issue are hazardous substances; (2) there has been a release of the chemicals at  
15 defendants’ facilities; (3) the release or threatened release caused the plaintiff to incur necessary  
16 response costs consistent with the National Contingency Plan (NCP); and (4) defendants are  
17 within one of the four classes of persons subject to CERCLA’s liability provisions. (*Castaic  
18 Lake Water Agency, supra*, 272 F.Supp.2d at p. 1059.)

19 In general, elements to be shown are the same under CERCLA and HSAA. (*Nixon-Egli  
20 Equipment Co. v. John A. Alexander Co., supra*, 949 F.Supp. at p. 1441, fn. 4.) As explained in  
21 more detail *post*, however, the procedural requirements of the NCP are not an element of a cause  
22 of action for recovery of costs under the HSAA. (See *Redevelopment Agency of San Diego v.  
23 Salvation Army* (2002) 103 Cal.App.4th 755, 764-768 [procedural requirements of NCP not an  
24 element of cause of action under Polanco Redevelopment Act].) Even if NCP requirements were  
25 part of an HSAA claim, however, the Court finds that the District has substantially complied  
26 with those requirements.

27 Defendants do not contest that the chemicals involved in this case (primarily PCE, TCE,  
28 1,4-dioxane, and 1,1-DCE) are hazardous substances for purposes of both the HSAA and

1 CERCLA. The first element necessary for a HSAA claim (chemicals at issue are hazardous  
2 substances) is therefore satisfied.

3 The District submitted extensive evidence that hazardous substances were released at  
4 each defendant's site. *See* Appendices A - G. Defendants do not contest that hazardous  
5 substances were released at defendants' sites. Defendants dispute the amount and type of  
6 hazardous substances released, dispute whether the hazardous substances migrated to  
7 groundwater, and in some instances dispute whether they are responsible for the release. These  
8 disputes are addressed *post* in discussing the fourth element of an HSAA claim – whether  
9 defendants fall within a class of persons for whom CERCLA establishes liability. The second  
10 element necessary for a HSAA claim (hazardous substance release), however, is satisfied for  
11 each defendant.

12 The third element of a CERCLA claim is that the release or threatened release caused the  
13 plaintiff to incur necessary response costs consistent with the NCP. The necessity of the NBGPP  
14 is addressed above in the Court's discussion of the District's claims under the Orange County  
15 Water District Act, *supra*. With respect to consistency with the NCP, as noted *ante* and *post*,  
16 although NCP procedures must be followed to recover under CERCLA, the District has not filed  
17 a CERCLA claim. The District's claim is under the HSAA, and NCP compliance is not an  
18 element of a cause of action under the HSAA.

19 Even if NCP procedures were an element of the District's HSAA cause of action the  
20 District has "substantially complied" with those requirements, which is all that is necessary as a  
21 predicate to cost recovery, even under CERCLA.

22 In *Castaic Lake Water Agency*, the court described the standards for establishing  
23 causation under CERCLA:

24 Contrary to the rule followed in most areas of the law, the burden of proof as to  
25 causation in a CERCLA case lies with the defendant. The plaintiff must prove  
26 only that contaminants which were once in the custody of the defendant could  
27 have traveled onto the plaintiff's land, and that subsequent contaminants  
28 (chemically similar to the contaminants once existing in defendant's custody) on  
the plaintiff's land caused the plaintiff to incur cleanup costs. The plaintiff need  
not produce any evidence that the contaminants did flow onto its land from the  
defendant's land. Rather, once plaintiff has proven a *prima facie* case, the burden  
of proof falls on the defendant to *disprove causation*.

1 (*Castaic Lake Water Agency, supra*, 272 F.Supp.2d at p. 1065 [quoting *Westfarm Assoc. v.*  
2 *Washington Suburban Sanitary Com'n, supra*, 66 F.3d at p. 681 (affirming summary judgment  
3 for plaintiff), emphasis added by *Castaic Lake Water Agency Court*]; see also *United States v.*  
4 *Stringfellow* (C.D. Cal. 1987) 661 F.Supp. 1053, 1060-1061; *Fireman's Fund Ins. Co. v. City of*  
5 *Lodi* (9th Cir. 2002) 302 F.3d 928, 945 (*Fireman's Fund*).) The evidence at trial established that  
6 the VOCs under defendants' sites originated at those sites as a result of defendants' uses of those  
7 VOCs, and that those VOC's migrated to the groundwater, or threaten to migrate to the  
8 groundwater, that the District is remediating.

9       There are two distinct types of response costs under the HSAA and CERCLA: (1)  
10 removal costs; and (2) remedial costs. "[R]emoval actions generally are immediate or interim  
11 responses, and remedial actions generally are permanent responses." (*California v. Neville*  
12 *Chemical, supra*, 358 F.3d at p. 667 [quoting *Geraghty & Miller, Inc. v. Conoco, Inc.* (5th Cir.  
13 2000) 234 F.2d 917, 926].) These are not mutually exclusive categories, and the same activities  
14 may qualify both as removal costs and remedial costs. (*California v. Neville Chemical, supra*,  
15 358 F.3d at p. 667.) As the *California v. Neville Chemical* court noted, plaintiffs need not wait  
16 for completion of a final remedial action before seeking to recover response costs: "This is not to  
17 say that the Department was unable to bring *any* suit to recover *any* costs at the time Neville  
18 began excavating the extraction wells. . . . As soon as the Department expended its first dollar,  
19 it could have sued Neville for this dollar and sought a declaratory judgment of Neville's liability  
20 for future response costs." (*Id.* at p. 668, fn. 4 [emphasis in original].)

21       Claims for "removal" costs (which include "such actions as may be necessary to monitor,  
22 assess, and evaluate the release or threat of release of each hazardous substance . . ." [42 U.S.C. §  
23 9601(24)]) may be made as soon as funds are expended to investigate and evaluate  
24 contamination. (*California v. Neville Chemical, supra*, 358 F.3d at p. 668, fn. 4.)

25       Although a plaintiff under the HSAA must establish that it has incurred necessary  
26 response costs, a plaintiff under the HSAA (unlike CERCLA actions) need not establish that its  
27 costs were consistent with the NCP. In *Redevelopment Agency of San Diego v. Salvation Army*,  
28 *supra*, 103 Cal.App.4th at pages 764-768, the court found that the Polanco Redevelopment Act –

1 a state law that, like the HSAA, incorporates the scope of liability of CERCLA – did *not* import  
2 CERCLA’s NCP consistency requirements. The *Redevelopment Agency of San Diego* court  
3 stated:

4 As noted, the Polanco Act . . . provides that ‘the scope and standard of liability’ for cost  
5 recovery under that section ‘shall be the scope and standard of liability’ under CERCLA.  
6 We construe that reference in the Polanco Act to CERCLA’s scope of liability as simply  
7 incorporating CERCLA’s definition of who is liable for remedial costs. [Citations.]  
8 Similarly, we construe the Polanco Act’s reference to CERCLA’s standard of liability as  
9 merely incorporating the liability standards applied by courts in CERCLA cases, to wit,  
10 strict liability regardless of knowledge or intent . . . [i]n doing so, we reject [defendant’s]  
11 contention that the Polanco Act adopted various procedural requirements of the national  
12 contingency plan as an element of a cause of action for recovery of costs under the  
13 Polanco Act.

14 (103 Cal.App.4th at pp. 765-766.)

15 The reasoning of the *Redevelopment Agency of San Diego* court is particularly applicable  
16 here, because the Orange County Water District Act separately authorizes the District to take  
17 remedial action, and contains a statutory presumption that remedial actions taken by the District  
18 are both necessary and reasonable. (Section 40-8(c).) The HSAA’s “incorporation” of CERCLA  
19 says nothing about the NCP, but rather states simply: “‘Responsible party’ or ‘liable person,’ for  
20 purposes of this chapter, means those persons described in Section 107(a) of the federal act (42  
21 U.S.C. Sec. 9607(a)).” (Health & Saf. Code, § 25323.5, subd. (a)(1).)<sup>2</sup>

22 It is not necessary, however, to determine in this case whether consistency with the NCP  
23 is a necessary element for the District to recover response costs under the HSAA. Because the  
24 District is a state agency, defendants have the burden of establishing that the District’s response  
25 costs are not consistent with the NCP. (See 42 U.S.C. § 9607(a)(4)(A); *Baldwin County Water  
26 District v. County of Los Angeles* (1962) 208 Cal.App.2d 87, 90 [“The Water Code provides for  
27 the formation and regulation of state agencies for the purposes of controlling and distributing  
28 water. Among those agencies are irrigations districts, county water districts, and California water

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26 <sup>2</sup> The only reference to the NCP in the HSAA is in the section addressing sites listed and  
27 regulated by the Department of Toxic Substances Control (DTSC). (See Health & Saf. Code, §§  
28 25356, 25356.1.) The site at issue in *Fireman’s Fund* fell into this category. The NBGPP  
addresses VOC’s that have migrated off-site through groundwater, and that are not being  
addressed by either the DTSC or the Regional Water Quality Control Board (RWQCB).

1 districts”]; *Orange County Water Dist. v. City of Riverside, supra*, 173 Cal.App.2d at p. 169 [the  
2 District is one of the State’s “duly authorized public agencies”].) Defendants have not  
3 established that the District’s response costs are inconsistent with the NCP.

4 Even if the District had the burden to establish “substantial compliance” with the NCP,  
5 the District satisfied that burden. The evidence at trial established that the NBGPP is based on a  
6 thorough remedial investigation, involved the consideration of alternatives, and has been  
7 conducted in public forums and in compliance with the public participation requirements of  
8 CEQA.

9 In June of 2000 the District prepared a draft Focused Feasibility Study (FFS) to address  
10 groundwater contamination in the North Basin area. (TE 11771.) The District presented a power  
11 point on the FFS to representatives of the cities of Fullerton and Anaheim on May 31, 2001. (TE  
12 15855 [powerpoint]; TE 11081 [sign up sheet for power point presentation]; July 16, 2012, TT at  
13 4475:14 - 4478:20.)

14 In January of 2005 the District prepared a Supplemental Focused Feasibility Study  
15 (SFFS). (TE 11063.) The SFFS evaluated different treatment alternatives and developed cost  
16 estimates. (TE 11063; May 3, 2012, TT at 2185:16-17.) The SFFS was prepared to be consistent  
17 with the National Contingency Plan (NCP). (TE 708 at 1-5 to 1-6.) In April, 2005, the District  
18 prepared a Remedial Investigation Report (RIR). (TE. 15012 [conditionally received on August  
19 24, 2012. *See* TT at 7255:9-13].) From June 23, 2005, through July 29, 2005, the District made  
20 available and circulated for public comment a Draft Initial Study and Mitigated Negative  
21 Declaration for the North Basin Groundwater Protection Project (NBGPP). (TE 779a ; TE. 708  
22 at 1-6 [draft was circulated for public comment].) Throughout the development of the NBGPP,  
23 the District has considered numerous options and alternatives for the Project. (TT at 2187:12-  
24 25.)

25 In October, 2005 the District prepared a Geologist’s/Engineer’s Report on the North  
26 Basin Groundwater Protection Project (NBGPP). (TE 708.) This Report detailed the history of  
27 the project, including the FFS and the SFFS. (TE 708 at 1-2, 1-3 and 1-4.) The Report noted  
28 that the Draft Mitigated Negative Declaration had been circulated for public review in June - July

1 but that no suggestions for either modifications to the project or preparation of an Environmental  
2 Impact Report were received. (TE 708 at 1-6.) The Report noted that Kimberly Clark, a local  
3 business, had expressed an interest in using purified water from the Project and the District had  
4 fully evaluated the proposal. (TE 708 at 1-4.) The Report was presented to the Board in a public  
5 meeting, along with slides explaining the Project. (TT at 2186:21-26; TE. 871 [slides shown at  
6 public meeting].) The public is invited to speak at all such meetings. (TT at 2186:12-14.)<sup>3</sup>

7 Joint defense witness Dr. Larsen offered an opinion on NCP compliance. (August 23,  
8 2012, at TT 7125:16 to 7133:20.) The sole exhibit identified by Mr. Larsen as providing a basis  
9 for his opinion was TE 11771, the District's 2000 Focused Feasibility Study. (TT at 7126:20 -  
10 7129:1.) Although Dr. Larsen's primary criticism of this document appeared to be that it did not  
11 adequately discuss alternatives, he repeatedly noted that the Study did, in fact, consider  
12 alternatives. (TT at 7127:10 - 24 ["There really wasn't a formal RI Report available, but then  
13 this Report was a feasibility study-type report that did summarize some of the information with  
14 regard to the conditions at the site. And then it did lay out some alternatives, and it did make  
15 some evaluation of those alternatives."])

16 Mr. Larsen was asked if he had looked to determine if there was a remedial investigation  
17 report or a "substantially similar analysis" for the NBGPP, and testified that he had "looked  
18 through all the different documents that I understood were available . . . and none of those really  
19 fit the description of what I would consider a comprehensive remedial investigation report that  
20 would summarize all the data and then provide the underlying basis for a feasibility study." TT  
21 at 7129:10-25. Mr. Larsen, however, never identified or referenced the District's April, 2005,  
22 Remedial Investigation Report (RIR) of more than 600 pages. (TE 15012.) In addition, he  
23 testified that he had not evaluated TE 11109, the District's consultant's summary of NCP  
24 compliance steps. (TT at 7197:3 - 7198:15.)

25 In short, although the District was not obligated to show "substantial compliance" with  
26 the NCP, but it did so, and defendants failed to rebut the District's prima facie showing.

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27  
28 <sup>3</sup> The District offered additional documents regarding its CEQA process for the NBGPP,  
but they were excluded on relevance grounds. (TT at 4402:16 - 4410:10.)

1 EPA's NCP regulations provide: "A private party response action will be considered  
2 'consistent with the NCP' if the action, when evaluated as a whole, is in *substantial compliance*  
3 with the *applicable* requirements in paragraphs (5) and (6) of this section, and results in a  
4 CERCLA-quality cleanup; . . . ." (40 C.F.R. § 300.700(c)(3)(i), emphasis added.) Thus any  
5 requirement, including a "public participation" requirement, has to be "applicable" before it is  
6 relevant. If a requirement is "applicable" to an action, then the standard for evaluating  
7 "consistency" is whether the action, "when evaluated as a whole," is in "substantial compliance."  
8 The "public participation" provisions of the NCP do not require public participation in initial  
9 assessment and evaluation of contamination. Rather, they envision public participation in the  
10 adoption of a final *remediation* plan that adopts a permanent solution for a contaminated site.

11 As the court noted in *Carson Harbor Village, Ltd. v. County of Los Angeles* (9th Cir.  
12 2006) 433 F.3d 1260 (*Carson Harbor III*): "Several other courts, and the district court below,  
13 have held that 'participation by a public agency is sufficient to demonstrate compliance with the  
14 [National Contingency Plan] public comment requirement.'"<sup>4</sup> This pragmatic approach has been  
15 followed by several courts. (*Bedford Affiliates v. Sills* (2d Cir. 1998) 156 F.3d. 416, 428;  
16 *Norfolk Southern Ry. Co. v. GEE Co.* (N.D. Ill. 2001) 158 F.Supp.2d 878, 883 ["government  
17 agency involvement, similar to that of the IEPA in this case, can provide an adequate substitute  
18 for public notice and comment"]; *American Color & Chemical Corp. v. Tenneco Polymers, Inc.*  
19 (D.S.C. 1995) 918 F.Supp. 945, 957 ["This court . . . recognizes that governmental agencies  
20 charged with protection of the public interest may serve as substitutes for participation by  
21 individual members of the public, at least where the agency is actively involved in all aspects of  
22 the investigation, planning, and remediation of a release of a hazardous substance . . ."].)

23 Here the District is a public entity and was not only "actively involved" in all aspects of  
24 the investigation, planning, and remediation, but was actually carrying out that investigation,  
25 planning, and remediation.

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26  
27 <sup>4</sup> The Ninth Circuit in *Carson Harbor III* did not reach this issue, since it concluded that  
28 the public agency involvement in that case was minimal. (433 F.3d at p. 1266.) Here, the  
District is both the public agency and the party seeking response costs.

1 The third element necessary for a HSAA claim (release of hazardous substances caused  
2 plaintiff to incur necessary response costs) is satisfied. In addition, the District, although not  
3 required to do so, substantially complied with the NCP.

4 The costs for which the District seeks reimbursement include the costs of investigating  
5 and evaluating whether hazardous substances at defendants' sites reached groundwater and  
6 migrated off-site in groundwater, and the costs of constructing a treatment system to remove  
7 those hazardous substances from contaminated groundwater. Such costs are compensable  
8 response costs. (See *Castaic Lake Water Agency, supra*, 272 F.Supp.2d at pp. 1062-1063  
9 [response costs include "such other actions as may be necessary to prevent, minimize, or mitigate  
10 damage to the public health or welfare or to the environment"].)

11 The fourth and final element of an HSAA claim is that defendants are within one of the  
12 four classes of persons subject to CERCLA's liability provisions. The District has established  
13 that each of the defendants is either an owner or operator (or both) of a facility where the  
14 hazardous substances that caused the District to incur response costs were released. See  
15 Appendices A-G.

16 Under the strict liability provisions of HSAA and CERCLA liability does not turn on  
17 whether the owner or operator themselves caused the contamination - rather liability arises from  
18 the defendants' classification as owners or operators. As the court stated in *Western Properties*  
19 *Service Corp. v. Shell Oil Co.*, 358 F.3d 678 (9th Cir. 2004): "A landowner that buys property  
20 with the knowledge that it is contaminated with hazardous waste cannot establish any of the §  
21 107(b) defenses to § 107(a) liability." 358 F.3d at 688 (abrogated on other grounds by *Koutros v.*  
22 *Goss-Jewett Co.*, 523 F.3d 924 (9<sup>th</sup> Cir. 2008)).

23 The District established not only that each defendant was an owner or operator of a site  
24 where hazardous waste was released, but also that each defendant was a substantial factor in  
25 causing, or threatening to cause, VOC contamination of groundwater. As noted above, the  
26 Court's review and conclusions on causation with respect to each defendant are attached as  
27 Appendices A - G to this Statement.

28 The District has established a prima facie case to recover its response costs under the

1 HSAA.

2 As discussed in more detail *post*, this Court has the authority to award declaratory relief  
3 pursuant to Code of Civil Procedure section 1060. Under CERCLA, after spending money in  
4 response to an environmental hazard, a party may then obtain reimbursement for its initial  
5 outlays, as well as a declaration that the responsible parties will have continuing liability for the  
6 costs of finishing the job. (See *In re Dant & Russell, Inc.*, *supra*, 951 F.2d at pp. 249-250.)  
7 Declaratory relief for future costs pursuant to Code of Civil Procedure section 1060 is also  
8 appropriate with respect to the District's HSAA claims.

9 As noted above, the District presented evidence that it incurred \$3,741,689.80 in response  
10 costs prior to trial. The Court finds that these costs were reasonable and actually incurred by the  
11 District, and awards these sums to the District pursuant to the HSAA.

#### 12 **IV. DECLARATORY RELIEF CLAIMS**

13 In denying a defense motion for summary judgment, this Court previously found that, as  
14 with similar statutes such as CERCLA and the HSAA, the District may recover for costs incurred  
15 and seek declaratory relief for future costs. Defendants then are liable for those costs as they are  
16 incurred, without the need for additional litigation. (See RJN, Exh. 7 [Notice of Ruling];  
17 *California ex rel. Department of Toxic Substances Control v. Neville Chemical Company*,  
18 (2004) 358 F.3d 661 at p. 668, fn. 4; *In re Dant & Russell, Inc.* (1991) 951 F.2d 246, 249 [under  
19 CERCLA, a party can recover costs already incurred and obtain declaratory judgment regarding  
20 future costs].)

21 Code of Civil Procedure section 1060 provides: "[A plaintiff] may ask for a declaration  
22 of rights or duties, either alone or with other relief; and the court may make a binding  
23 declaration of these rights or duties, whether or not further relief is or could be claimed at the  
24 time." The remedies provided by declaratory relief "are cumulative," do not restrict any other  
25 remedies, and declaratory relief does not "preclude any party from obtaining additional relief  
26 based upon the same facts." (Code Civ. Proc., § 1062.)

27 Declaratory relief is commonly awarded in cases involving long-term remediation of  
28 groundwater contamination and hazardous waste cleanup. That is because, while there is a

1 present controversy between the parties that is ripe for judicial adjudication, the ultimate costs of  
2 remediation are seldom known with sufficient precision at the time of the lawsuit to support an  
3 award of damages with respect to those future costs. (See *In re Dant & Russell, Inc.*, *supra*, 951  
4 F.2d at pp. 249-250; see also *Rubin v. Toberman* (1964) 226 Cal.App.2d 319, 325-326  
5 [declaratory relief available to interpret real estate contract so buyer could determine rights  
6 before spending money for improvements]; *Schafer v. Wholesale Frozen Foods, Inc.* (1959) 171  
7 Cal.App.2d 232, 234-235 [declaratory relief available to determine rights and obligations  
8 between lessee and sublessee regarding uncertain amount owed lessor for damages to premises].)

9 This Court previously applied *California v. Neville Chemical*, *supra*, and *In re Dant &*  
10 *Russell*, *supra*, to deny a defense motion for summary judgment with respect to future costs.  
11 Defendants present no new facts or law that would require reconsideration of the Court's ruling.  
12 In fact, the only new California opinion cited by defendants, *Orange County Water Dist. v.*  
13 *Arnold Engineering Co.*, *supra*, 196 Cal.App.4th 1110, expressly stated: "[T]he Water District is  
14 entitled to recover monetary damages for the investigation and remediation costs it incurred *and*  
15 *will incur in the future.*" (*Id.* at p. 1126 [emphasis added].)

16 Defendants argue that the future costs for removing contamination from groundwater are  
17 too speculative to be compensated. The District, however, is not seeking an award of "future  
18 costs" pursuant to the HSAA, but rather is seeking declaratory relief as to defendants' liability for  
19 future costs. Defendants have not cited any cases in which declaratory relief with respect to  
20 liability for future costs has been denied to a plaintiff who has established liability for incurred  
21 costs. To the contrary, courts have uniformly ruled that: "As soon as [plaintiff] expended its  
22 first dollar, it could have sued [defendant] for this dollar and sought a declaratory judgment of  
23 [defendant's] liability for future response costs." (*California v. Neville Chemical*, *supra*, 358  
24 F.3d at p. 668, fn. 4.)

25 Nothing in the Orange County Water District Act or HSAA suggests that declaratory  
26 relief should be treated differently in this case than it is in other cases involving contamination  
27 with hazardous substances. Section 40-8(c) provides that a person "causing or threatening to  
28 cause . . . contamination or pollution *shall be liable* to the district to the extent of the reasonable

1 costs actually incurred in cleaning up or containing the contamination or pollution . . .”  
2 (emphasis added).<sup>5</sup>

3 Although defendants have emphasized the phrase “actually incurred” in their briefing, it  
4 is the phrase “shall be liable” that is the operative phrase in this provision. The phrase “actually  
5 incurred” simply describes the type of costs for which defendants “shall” be liable. These are  
6 costs that have gone through the District’s normal processes for cost approval and bidding. The  
7 Act’s remedies section also broadly states that “[i]f . . . in the case of threatened contamination or  
8 pollution, other necessary remedial action is taken, the person causing or threatening to cause that  
9 contamination or pollution shall be liable to the district . . . .” (Section 40-8(c).) The Legislature  
10 plainly intended that OCWD have broad authority to recover the costs of taking remedial action,  
11 so long as those costs arose in the course of addressing actual or threatened pollution. That is the  
12 case here.

13 In *Shamsian v. Atlantic Richfield Co.* (2003) 107 Cal.App.4th 967, 984, another case  
14 involving groundwater contamination, the court found that declaratory relief was an appropriate  
15 remedy for declaring rights and responsibilities. In fact, declaratory relief is a standard form of  
16 relief in cases involving hazardous contamination and long time horizons. Such relief obviates  
17 the need to repeatedly re-try the issue of responsibility for additional damages caused by the  
18 spread of contamination.

19 A claim for declaratory relief as to CERCLA liability is ripe “so long as there has been a  
20 release of hazardous substances, and the plaintiff spends some money responding to it.” (*City of*  
21 *Colton v. American Promotional Events, Inc.–West* (9th Cir. 2010) 614 F.3d 998, 1005.) As the  
22 court explained in *California v. Neville Chemical, supra*, 358 F.3d at page 668, footnote 4: “As  
23 soon as the [plaintiff] expended its first dollar, it could have sued [defendant] for this dollar and  
24 sought a declaratory judgment of [defendant’s] liability for future response costs.” (See also *In*  
25 *re Dant & Russell, Inc., supra*, 951 F.2d at pp. 249-250 [“This system strikes a balance . . . [b]y

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26  
27 <sup>5</sup> The word “shall” is a gerund, meaning it applies to past, present, and future actions, but  
28 in the context of the Act it plainly refers to the future – that is, what will occur after the  
contamination or pollution, or threatened contamination or pollution.

1 requiring a plaintiff to take some positive action before coming to court, [it] ensures that the  
2 dispute will be ripe for judicial review . . . by not requiring plaintiffs to perform full cleanup  
3 before coming to court [it] substantially reduces the risk involved in performing the cleanup”];  
4 *Boeing Co. v. Cascade Corp.* (9th Cir. 2000) 207 F.3d 1177, 1191 [“CERCLA was intended to  
5 encourage quick response and to place the costs on those responsible. [Footnote.] Declaratory  
6 relief serves these purposes . . . . The costs and time involved in relitigating issues as complex as  
7 these where new costs are incurred would be massive and wasteful. Declaratory relief allocating  
8 future costs is therefore consistent with the broader purposes of CERCLA”]; *Stanton Road*  
9 *Associates v. Lohrey Enterprises* (1993) 984 F.2d 1015 at p. 1021 [“CERCLA further provides  
10 for a declaratory judgment action to establish liability for *future* response costs. [Citation]”  
11 (emphasis in original)]; *Kelley v. E.I. DuPont de Nemours and Co., supra*, 17 F.3d at pp. 844-  
12 845 [affirming grant of declaratory relief to cover future cleanup costs].)<sup>6</sup> The purpose of  
13 declaratory relief is to promote judicial efficiency by permitting the Court to determine the  
14 responsible party’s liability and then requiring such party to bear the responsibility “for the cost  
15 of finishing the job.” (*City of Colton, supra*, 614 F.3d at p. 1008 [quoting *In re Dant & Russell,*  
16 *Inc., supra*, 951 F.2d at pp. 249-250].) The principles are consistent with case law involving  
17 other causes of action, including nuisance. (*Renz v. 33rd Dist. Agricultural Assoc.* (1995) 39  
18 Cal.App.4th 61, 68 [“[I]t is clear that damages incurred between the commencement and the  
19 conclusion of a continuing nuisance action should be recoverable in that action”] [citing Civ.  
20 Code, § 3283]; *Keyes v. Romley*.(1966) 64 Cal.2d 396, 411 [same].)

21 The reasoning in all of these cases is equally applicable to declaratory relief pursuant to  
22 Code of Civil Procedure section 1060. In the absence of declaratory relief, the District would be  
23 forced to repeatedly re-litigate the issue of responsibility for VOC contamination at the sites  
24 where the Court already has determined responsibility, every time the District incurred a new  
25 cost increment in cleaning up the groundwater.

26 Defendants acknowledge the Orange County Water District Act’s presumption that costs  
27

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28 <sup>6</sup> See footnote 2, *ante*.

1 incurred by the District are reasonable, but ask the Court, in considering declaratory relief, to  
2 distinguish “past costs, which have gone through administrative review as well as bidding and  
3 approval procedures” from “future costs” which “by definition have not been subjected to the  
4 administrative appeal process . . . .” (Defendants’ Joint Trial Brief, filed March 2, 2012, at p.  
5 32.) The District, however, requires that all costs go through the administrative review, bidding,  
6 and approval process, and that requirement will apply to future costs incurred in connection with  
7 the NBGPP. Declaratory relief can and will be shaped to insure that defendants are liable only  
8 for such future costs as are incurred during the District’s normal processes for incurring such  
9 costs.

10 Although defendants argue that declaratory relief should not be awarded because the costs  
11 of the NBGPP attributable to a particular defendant may change in the future as different aspects  
12 of the VOC plumes are remediated, this is not a basis for denying declaratory relief. It is,  
13 however, a basis for the Court to retain jurisdiction, as is common when declaratory relief is  
14 awarded in groundwater contamination cases. In any event, Civil Code section 1431 provides  
15 that liability “is presumed to be joint and *not* several . . .” (emphasis added). “[A] defendant has  
16 no equitable claim vis-a-vis an injured plaintiff to be relieved of liability for damage which he  
17 has proximately caused simply because some other tortfeasor’s negligence may also have caused  
18 the same harm.” (*American Motorcycle Assn. v. Superior Court (Viking Motorcycle Club)*  
19 (1978) 20 Cal.3d 578, 589.) “[Under § 1431] . . . tortfeasors . . . must bear the risk of non-  
20 recovery from impecunious tortfeasors.” (*Aetna Health Plans v. Yucaipa-Calimesa Joint Unified*  
21 *School District* (1999) 72 Cal.App.4th 1175, 1189-1190.)

22 The Orange County Water District Act does not address joint and several liability, so  
23 liability is presumptively joint and several pursuant to Civil Code section 1431.

24 The HSAA provides: “In resolving claims for contribution or indemnity, the court *may*  
25 allocate costs among liable parties using those equitable factors which are appropriate.” (Health  
26 & Saf. Code, § 25363, subd. (e) [emphasis added].) In order to conduct such an allocation,  
27 however, the Court must be presented with evidence that allows it to determine the relative  
28 contribution of each defendant to the overall harm. Rather than addressing their respective

1 contributions, all defendants (with the exception of Northrop) elected to argue that they did not  
2 contribute at all to the contamination. This leaves the Court without an evidentiary basis for  
3 allocating liability when awarding declaratory relief. As the Court held in *BKHN, Inc. v.*  
4 *Department of Health Services* (1992) 3 Cal.App.4th 301, 310: "In order to determine this [pre-  
5 trial motion re joint liability], the court would have to imagine a myriad of hypotheticals,  
6 speculate on the application of Health and Safety Code section 25363 to those hypotheticals, and  
7 conclude that under no circumstances would equitable principles warrant a finding of joint and  
8 several liability among the defendants." The defendants' failure to present evidence supporting  
9 an allocation of liability, however, does not provide a basis for *denying* declaratory relief. It  
10 simply means that the Court is not in a position to allocate liability when awarding declaratory  
11 relief.

12 In response to a special interrogatory asking whether the District sought monetary  
13 damages under its sixth cause of action, for declaratory relief, the District responded:

14 The District does not seek a judgment for money damages in its sixth cause of action.  
15 Under the sixth cause of action the District seeks declarations that: (a) the District's  
16 proposed North Basin Groundwater Protection Project is necessary to prevent present and  
17 threatened VOC pollution or contamination of the water supply of the District; (b) the  
18 actual and projected costs of the Project are reasonable and necessary; (c) defendants have  
19 caused existing and threatened pollution and contamination of the District's water supply;  
20 and (d) defendants are liable for the costs of the Project. The District will also seek such  
21 other declarations as may be necessary to conform to proof at trial.

22 (Plaintiff Orange County Water District's Responses to Defendant Northrop Grumman Systems  
23 Corporation's Special Interrogatories, Set Nine, at p. 5:3-10 [Response to Special Interrogatory  
24 No. 350].) This suggested relief appropriately declares the rights and obligations of the  
25 respective parties with respect to the key issues not addressed by the Court's award of monetary  
26 damages. The District is directed to prepare and circulate a proposed order reflecting this  
27 declaratory relief.

## 28 V. DEFENSES

### A. Partial Preemption

#### 1. Scope of Liability

Defendants argue that the Orange County Water District Act and HSAA have been

1 partially preempted by CERCLA. In particular, defendants argue that the presumption of  
2 reasonableness in Section 40-8(c) that attaches to remedial measures taken by OCWD, as well as  
3 the provision for OCWD to recover its attorney fees, have been preempted.

4 This Court, however, previously denied a motion for summary adjudication by  
5 defendants based upon this argument. In denying defendants' summary adjudication motion, the  
6 Court (Judge Thierry Patrick Colaw) held:

7 Both the OCWDA and the HSAA and case law interpreting those acts authorize the  
8 OCWD to recover for incurred expenses of remediation and future costs. *California*  
9 *Dept. etc. v. Neville Chemical Co.* (9th Cir. 2004) 358 F.3d 661, 668, n. 4; *In re Dant &*  
10 *Russell v. Burlington Northern* (1991) 951 F.2d 246, 249-250. Northrop also fails to  
11 meet its burden that OCWD is a PRP and unable to claim indemnity because of  
12 perchlorate contamination. The necessary elements have not been established as set forth  
13 in *Castaic Lake Water Agency v. Whittaker* (2003) 272 F.Supp.2d 1053, 1059. . . . Also  
14 regarding attorney fees, even had Northrop shown that OCWD was a PRP, the "savings"  
15 clauses of CERCLA would permit recovery of attorney fees under state law. The  
16 *Fireman's Fund v. City of Lodi* case is clearly distinguishable on its facts.

17 (Minute Order [Jan. 18, 2008].) Defendants have presented no substantive or procedural basis  
18 for reconsidering that decision. Defendants, of course, bear the burden of proving preemption.  
19 (*Steele v. Collagen Corp.* (1997) 54 Cal.App.4th 1474, 1489-1490.)

20 There are three types of preemption: "field" preemption, "obstacle" preemption, and  
21 "conflict" preemption. (*Brown v. Mortensen* (2011) 51 Cal.4th 1052, 1059.) Defendants have  
22 not met their burden with respect to any of the three types. With respect to field preemption,  
23 *Fireman's Fund, supra*, 302 F.3d 928, which defendants themselves cite repeatedly, held that the  
24 claim that CERCLA and HSAA occupy the "field" of hazardous waste regulation is "contrary to  
25 [Supreme Court precedent], contrary to the language of the statute itself, and contrary to reason."  
26 (*Id.* at pp. 941-942.)

27 Part of the basis for the *Fireman's Fund* conclusion was that "CERCLA contains three  
28 separate savings clauses . . . ." (302 F.3d at p. 941.) CERCLA § 9652(d) provides: "Nothing in  
this chapter shall affect or modify in any way the obligations or liabilities of any person under . . .  
common law . . . with respect to releases of hazardous substances or other pollutants or

1 contaminants.”<sup>7</sup>

2 Health and Safety Code section 25366, subdivision (c) [HSAA], provides: “[N]othing in  
3 this chapter shall affect or modify in any way the obligations or liability of any person under . . .  
4 common law, for damages, injury, or loss resulting from a release of any hazardous substance or  
5 for removal or remedial action or the costs of removal or remedial action of such hazardous  
6 substance.”

7 In addition to these “imbedded” savings provisions in CERCLA and the HSAA, Water  
8 Code section 13002 provides: “No provision of this division or any ruling of the state board or a  
9 regional board is a limitation: . . . (e) On the right of any person to maintain . . . any appropriate  
10 action for relief against any private nuisance . . . or for relief against any contamination or  
11 pollution.”

12 The second form of preemption is obstacle preemption. “[O]bstacle preemption arises  
13 when under the circumstances of [a] particular case, [the challenged state law] stands as an  
14 obstacle to the accomplishment and execution of the full purposes and objectives of Congress.”  
15 (*In re Jose C.* (2009) 45 Cal.4th 534, 551 [internal quotation marks and citations omitted].) As  
16 noted *ante*, the elements of liability are generally the same under CERCLA and HSAA. (*Nixon-*  
17 *Egli Equipment Co. v. John A. Alexander Co.*, *supra*, 949 F.Supp. at p. 1441, fn. 4.) Defendants  
18 have not shown that the HSAA is inconsistent with federal aims or poses an obstacle to federal  
19 policy. To the contrary, the HSAA “is wholly consistent with federal objectives” (*In re Jose C.*,  
20 *supra*, 45 Cal.4th at p. 554) and “is no obstacle to federal goals; instead, it ensures precisely the  
21 approach Congress expressly prefers” (*id.* at p. 555). The District’s HSAA claim is not barred by  
22 obstacle preemption.

23 The third form of preemption is conflict preemption. Defendants have not presented any  
24 evidence of a conflict between the District’s claims and CERCLA or the HSAA. Defendants

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25  
26 <sup>7</sup> See also CERCLA § 9607(i) (exempting some pesticide applications from CERCLA,  
27 but providing: “Nothing in this paragraph shall affect or modify in any way the obligations or  
28 liability of any person under . . . common law, for damages, injury, or loss resulting from a  
release of any hazardous substance or for removal or remedial action or the costs of removal or  
remedial action of such hazardous substance”).

1 base their conflict preemption claim solely on *Fireman's Fund*, *supra*, 302 F.3d 928. In  
2 *Fireman's Fund*, the court largely upheld, as against a conflict preemption challenge, a municipal  
3 ordinance enacted by the City of Lodi to address hazardous waste. The *Fireman's Fund* court  
4 did find, however, that three sections of the ordinance, having to do with the City's self-awarded  
5 immunity from contribution claims, the City's re-assignment of burdens of proof, and the City's  
6 authorization of awards of attorney fees to itself, were conflict preempted. Defendants'  
7 arguments that these findings from *Fireman's Fund* should be applied here miss the mark for  
8 several reasons.

9 First, the State Legislature, not the Orange County Water District, adopted the Orange  
10 County Water District Act. In *Fireman's Fund*, the City of Lodi, which was the plaintiff in the  
11 case, legislated *itself* a litigation advantage. In the instant case, the State Legislature established  
12 the provisions of the Orange County Water District Act that defendants claim create a conflict  
13 with CERCLA and the HSAA. The Legislature also adopted the HSAA, and presumably did not  
14 intend a conflict between the HSAA and Orange County Water District Act, both of which were  
15 adopted by the same legislative body.

16 Second, the *Fireman's Fund* court found a conflict in the City of Lodi's ordinance  
17 because the City granted itself immunity from contribution claims, whereas CERCLA and the  
18 HSAA specifically authorized contribution claims against all potentially responsible parties  
19 (PRP's). (See *Fireman's Fund*, *supra*, 302 F.3d at p. 946 ["If Lodi is indeed a PRP, it cannot  
20 simply legislate away this potential contribution liability under state and federal law"].) Here,  
21 although the District has defenses to contribution claims, it has not adopted legislation  
22 attempting to exempt itself from such claims.

23 Third, defendants argue that the OCWD Act's presumption that the District's response  
24 costs are reasonable is in conflict with CERCLA. Under CERCLA, when the U.S. Government,  
25 a State, or an Indian Tribe is seeking to recover response costs, the burden is on the objecting  
26 party to establish that such costs are *not* consistent with the NCP. (42 U.S.C. § 9607(a)(4)(A).)  
27 For any "other person" seeking to recover response costs, the burden is on that person to show  
28 that such costs *are* "consistent" with the NCP. (42 U.S.C. § 9607(a)(4)(B).) Defendants argue

1 that the District falls into the category of “other person” under CERCLA and the presumption of  
2 reasonableness in the Orange County Water District Act effectively eliminates what would  
3 otherwise be the District’s burden to establish consistency with the NCP.

4 As the *Fireman’s Fund* court itself noted, however, “local governments are entitled to the  
5 presumption of consistency when performing cleanups pursuant to one of several California code  
6 sections.” (302 F.3d at p. 950, fn. 20 [citing Polanco Redevelopment Act].) The Orange County  
7 Water District Act is plainly a provision of the California Water Code and its presumption of  
8 reasonableness does not conflict with CERCLA.

9 As noted *ante*, NCP consistency requirements apply only to certain types of activities, and  
10 the NBGPP is not among such activities. The only potentially relevant provision of the NCP is  
11 the public participation requirement, and that requirement is optional for public agencies such as  
12 the Orange County Water District. (*Carson Harbor II, supra*, 287 F.Supp.2d at p. 1162.) In any  
13 event, as also noted *ante*, the District has substantially complied with the relevant provisions of  
14 the NCP.

15 Finally, defendants cite *Fireman’s Fund*, for the proposition that Section 40-8(c)’s  
16 provision for attorney fees is in conflict with CERCLA because CERCLA does not provide for  
17 attorney fees. *Fireman’s Fund*, however, held only that the City of Lodi could not “legislate for  
18 itself a litigation advantage by granting itself the right to collect attorney fees.” (302 F.3d at p.  
19 953.) The *Fireman’s Fund* “preemption” finding was limited to “the peculiar facts of this case.”  
20 (*Ibid.*) Here the State Legislature, not the District, provided for the District to be awarded its  
21 fees, and there is nothing in CERCLA or the HSAA that conflicts with this action by the State  
22 Legislature.

23 Neither the Ninth Circuit nor any other court has determined that CERCLA preempts  
24 state-authorized fee awards. Although defendants argue that the District is potentially a PRP, as  
25 explained below defendants have failed to establish any liability on the part of the District, and in  
26 any event defendants make no attempt to explain why PRP status should be relevant to attorney  
27 fees under the Act. Here, the State Legislature, not the District, has authorized the District to  
28 recover fees, and the “savings” provisions of CERCLA specifically preserve such state law

1 remedies.

2 **B. Comparative Fault**

3 All remaining defendants asserted affirmative defenses based on comparative fault. No  
4 defendant, however, complied with the procedural requirements for asserting liability claims  
5 against government agencies, which apply both to affirmative claims and equitable claims based  
6 upon comparative fault.

7 Water Code Appendix section 40-20.5 provides that Government Code sections 900-962  
8 (portions of the Government Claims Act)<sup>8</sup> are applicable to claims against the District. Under  
9 the Government Claims Act (Gov. Code § 810, et seq.), there is no common law tort liability for  
10 public entities in California. Instead, such liability must be based on statute. (Gov. Code §  
11 815(a) [“except as otherwise provided by statute: a public entity is not liable for an injury,  
12 whether such injury arises out of an act or omission of the public entity. ...”; *Guzman v. County*  
13 *of Monterey* (2009) 46 Cal.4th 887, 897 citing *Williams v. Horvath* (1976) 16 Cal.3d 834, 838  
14 [“intent of the act is not to expand the rights of plaintiffs and suits against governmental entities,  
15 but to confine potential government liability to rigidly delineated circumstances.”].)

16 These immunities are not waived even where the government agency initiates a lawsuit  
17 and a defendant, in either affirmative defenses or a cross-complaint, alleges that the public  
18 agency’s conduct constituted comparative negligence. (*People ex rel. Grijalva v. Superior Court*,  
19 (2008) 159 Cal.App.4th 1072, 1075-1079.) Accordingly, “back door” attempts to introduce  
20 comparative fault or mitigation principles will not survive attack at the pleading stage. (*Id.*)

21 Any person asserting a claim under the Government Claims Act is required to give notice  
22 to the entity against which it is claiming, and provide an opportunity for the entity to grant or  
23 reject the claim. (Government Code § 905; *Castenada v. Department of Corrections* (2012) 207  
24 Cal.App.4th 1488, \_\_\_\_ (144 Cal.Rptr.3d 641, 649) [“The intent of the Tort Claims Act is not to  
25 expand the rights of plaintiffs against governmental entities. Rather, the intent of the Act is to

26 \_\_\_\_\_  
27 <sup>8</sup> The Government Claims Act was formerly known as the Tort Claims Act. (*City of*  
28 *Stockton v. Superior Court (Civic Partners Stockton, LLC)* (2007) 42 Cal.4th 730, 741-742, and  
fn. 7.)

1 confine potential governmental liability to rigidly delineated circumstances. The Tort Claims  
2 Act requires that any civil complaint for money damages first be presented to and rejected by the  
3 pertinent public entity.”) This requirement applies to cross-claims for equitable indemnity. *State*  
4 *v. Superior Ct. (Short Stop)* (1983) 143 Cal.3d 754; *Greyhound Lines Inc. V. County of Santa*  
5 *Clara* (1986) 187 Cal.App.3d 480. *See generally* California Government Tort Liability, §  
6 6.33(c) (2011). Here, defendants presented no evidence that they had presented their claims to  
7 the District prior to asserting cross-claims. In addition, no defendant notified DTSC of the filing  
8 of a claim under the HSAA, as required by Health and Safety Code section 25363, subdivision  
9 (e).

10 The Government Claims Act requires that claims for money or damages against a public  
11 entity must be presented and rejected before a suit can be brought against the public entity.  
12 Health and Safety Code section 25363, subdivision (e), requires that a cross-complainant seeking  
13 contribution or indemnity under the HSAA shall give written notice to the Director of the DTSC.

14 At trial defendants failed to provide evidence that they gave proper notice under the  
15 Government Claims Act before filing their cross-complaints against the District, or that  
16 defendants gave proper notice of their cross-complaints to the Director of the DTSC.  
17 Accordingly, the Court finds that defendants’ cross-claims against the District are barred by the  
18 Government Claims Act and the HSAA.

19 Government Code § 815 provides that, except as otherwise provided by statute, public  
20 entities are not liable for injuries caused by an act or omission of the entity or employees of the  
21 entity. The District is a public entity and entitled to these immunities. The immunities apply not  
22 only to cross-claims against the District, but also to affirmative defenses based on comparative  
23 fault. *People ex rel. Grijalva, supra*.

24 Even if defendants had complied with the predicate requirements of the Government  
25 Claims Act and the HSAA, defendants had the burden of producing evidence to support their  
26 allegations that they had been injured by the District acts or omissions. Defendants failed to  
27 meet this burden.

28 Defendants comparative fault defenses assert that water used by the District to recharge

1 groundwater contains perchlorate and nitrates that have migrated to the Project area and that may  
2 need to be treated by the NBGPP. The joint defense expert on this issue was Mr. Lambie.

3 The District improves the quality of recharge water in the recharge basins up-gradient of  
4 the NBGPP area by treating seventy million gallons of water a day in the District's Groundwater  
5 Replenishment System to a point where the water is nearly pure H<sub>2</sub>O, then sending a significant  
6 percentage of that water to the spreading facilities above the recharge basins. (TT at 391:23 -  
7 401:7.) The District spent \$480 million on the Groundwater Replenishment System (TT at  
8 9524), and water from this system has reduced the District's reliance on Colorado River Water  
9 (TT at 400:7 - 401:7) and offsets the salts (both nitrates and perchlorate) in water from other  
10 sources. (TT at 398:26 - 399:16.)

11 The District also engineered wetlands to reduce the levels of nitrates in recharge water  
12 (TT at 371:18 -22) and succeeded in dramatically reducing those levels to below drinking water  
13 standards at the point of recharge. (TT at 373:3 -11.). Levels of perchlorate in recharge water  
14 from the Metropolitan Water District have also been reduced, and currently vary from 2.5 ppb to  
15 non-detect. (TT 401:22 - 402:3.)

#### 16 **Perchlorate**

17 Mr. Lambie testified that in order to determine the amount of perchlorate in District  
18 recharge water between 1960 and 1996, he looked at perchlorate data from Lake Mead, in  
19 Nevada, and estimated average levels at Lake Mead of 15.8 ppb, and then looked at perchlorate  
20 data from water delivered to the District, and estimated an average level in water delivered of 7  
21 ppb. TT at 6566:5-18. He then estimated a high end of mass based on the Lake Mead levels and  
22 a low end based on average levels in water delivered to the District. (TT at 6566:17-19.)<sup>9</sup>

23 \_\_\_\_\_  
24 <sup>9</sup> Defendants argue that they did not discharge perchlorate or nitrates and therefore  
25 should not have to pay for the cost of treating nitrates and perchlorate in wells constructed to  
26 treat VOC's released from defendants' sites. The extraction wells constructed by the District,  
27 however, were designed to intercept, hydraulically control, and clean up defendants' VOCs. The  
28 District would not have to treat the water to remove nitrates or perchlorate but for the fact that  
extraction wells are necessary to remove defendants' VOCs. Defendants are responsible for the  
incidental costs of removing nitrates or perchlorate extracted along with defendants' VOC's.

(continued...)

1 Although Mr. Lambie asserted that a mass of perchlorate with an average concentration  
2 of 6 ppb was spread throughout the project area (TT at 6613:6-10; TE 15192), on cross  
3 examination he admitted: "I'm aware there's perchlorate deeper than the treatment area. The  
4 mass reflected on this page is the total mass." (TT at 6614:12-14. *See also* TT at 6685:17 -  
5 6686:16). Mr. Lambie also admitted that even using his recharge estimates, after thirty three  
6 years not even 1 ppb of perchlorate made it to EW 2, the only extraction well in which  
7 perchlorate had been detected. (TT at 6685:1-14 ["Layer 3 would be what the District has  
8 referred to now as either the upper principal aquifer . . . Q. And the 1 part-per-billion contour  
9 still does not reach EW-2 after 33 years, correct? A. According to this model."].) Mr. Lambie  
10 in fact *did not offer an opinion* as to how much of the mass he attributed to the District's  
11 recharge would be captured by any of the District's extraction wells. (TT at 6691:25 - 6692:2  
12 ["Have you calculated the mass of perchlorate in the principal aquifer and separated it from the  
13 mass above that? A. No I have not." *See also* TT at 6687:1-4 ["In other words, the extent of the  
14 1 part-per-billion contour seems to expand in the principal aquifer, correct? A. That's correct,  
15 because some of the dilutionary effects are gone."])

16 In other words, regardless of the accuracy of the total mass that Mr. Lambie calculated, he  
17 never identified how much of his District-related perchlorate (if any) would be extracted by the  
18 NBGPP extraction wells, and how much would dive beneath the influence of those well and  
19 never be drawn into them. Based upon the distribution of that mass in the "layers" beneath the  
20 surface, however, it appears that little (if any) of Mr. Lambie's total estimated District-related  
21 perchlorate mass would be drawn into the extraction wells.

22 The parties stipulated that the most representative measuring point for perchlorate in the  
23 Metropolitan Water District's (MWD's) water delivered to the District is at Lake Mathews. (TT  
24 at 5183:22 - 25 and 5188:10-17.) The parties also agreed that Table B in TE. 15859 shows

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25  
26 <sup>9</sup> (...continued)  
27 (See Rest.3d Torts, Apportionment of Liability, § E18, com. d [when independent tortious  
28 conduct of two or more parties is a legal cause of an injury, each defendant is jointly and severally  
liable for the economic damages].)

1 perchlorate levels in Lake Mathews from June, 1997, when measurements first became available,  
2 through June, 2011. The highest levels recorded were 8 ppb in 1997 and 1999. (*Id.*) Levels  
3 decreased steadily after that, and have been non-detect since 2005. (*Id.*)

4 Despite the stipulated actual data from Lake Mathew, Mr. Lambie used concentrations of  
5 15.8 and 7 ppb as the basis for calculating the high and low mass of perchlorate assignable to the  
6 District's recharge activities. Even an estimate concentration of 17.2 ppb (approximately twice  
7 what had ever been actually measured at the effluent point) as an influent concentration at the  
8 District's recharge point, Mr. Lambie admitted that his model showed less than 1 ppb arriving at  
9 EW-2, the only extraction well where perchlorate has ever been detected. (TT at 6674:9-11  
10 ["Isn't it a fact that your model shows that less than 1 part per billion of perchlorate arrives at  
11 EW-2? A. I think that's correct."]). Perchlorate had been measured at levels of 6 ppb in EW-2  
12 (TT at 6674:19-21), however, and Mr. Lambie did not identify the source of the additional  
13 perchlorate.

14 Although Mr. Lambie's model showed perchlorate in EW-1, he could not recall whether  
15 perchlorate had ever actually been detected in EW-1 (it hadn't). (TT at 6694:1-11.) He  
16 nevertheless testified that water from EW-1 should be treated for perchlorate (that he assigned to  
17 the District) because "EW-2 cannot capture the plume without the assistance of EW-1." (TT at  
18 6696:22-23.) He then admitted though, that he had never run EW-2 without ES-1, and "I think  
19 that might be a better way of looking at it, yes." (TT at 6697:6-18.)

20 Defendants argue they did not discharge perchlorate or nitrates and therefore they should  
21 not have to pay for the cost of treating nitrates and perchlorate. The extraction wells constructed  
22 by the District, however, were designed to intercept, hydraulically control, and clean up  
23 defendants' VOCs. Although nitrates or perchlorate may be incidentally captured at some  
24 extraction wells in concentrations which require separate treatment so that the treated water can  
25 be discharged back into groundwater, the wells were not constructed for the purpose of treating  
26 nitrate or perchlorate. But for defendants' VOCs, the District would not have to treat the water  
27 to remove nitrates or perchlorate. Defendants are responsible for the incidental costs of  
28 removing nitrates or perchlorate extracted along with defendants' VOC's, to the extent the

1 Regional Water Quality Control Board discharge standards require removal of nitrates and  
2 perchlorate before the treated water is re-injected into groundwater. (See Rest.3d Torts,  
3 Apportionment of Liability, § E18, com. d [when independent tortious conduct of two or more  
4 parties is a legal cause of an injury, each defendant is jointly and severally liable for the  
5 economic damages].)

#### 6 Nitrate

7 Mr. Lambie calculated that twelve million pounds of nitrate were added to the aquifer  
8 between 2005 and 20120 by the District's recharge basins. TT at 6563:1-10.

9 Mr. Lambie did not dispute the testimony of the District's witness Mr. Wehner that the  
10 District's actions have reduced nitrate levels in recharge water to below MCLs for nitrate. In  
11 addition, Mr. Lambie conceded that age dating of nitrates in groundwater down-gradient of the  
12 Project area that exceeds maximum contamination levels is from 20 to 35 years old. (TT at  
13 6703:20-26.) He also conceded that those levels resulted from activities that would have  
14 occurred some 20 or more years ago. (TT at 6704:5-10.) Mr. Lambie admitted that there is a  
15 "paucity" of actual data regarding historic levels of nitrate in the Santa Ana River. (TT at  
16 6706:1-4.)

17 Mr. Lambie testified that tracer studies conducted by the Lawrence Livermore  
18 Laboratories showed most of the water from the recharge ponds goes to the Southwest. (TT at  
19 6710:9:18.) In his direct testimony, he relied upon a Lawrence Livermore Laboratory Study to  
20 determine the isotopic signature of perchlorate in the Colorado River. (TT at 6565:7-12.) For  
21 his opinion, however, he assumed that any perchlorate in recharge waters would migrate more  
22 than a mile to the West/Northwest. (TT at 6713:2-7.)

#### 23 C. Allocation

24 Prior to trial, the parties extensively briefed the issue of joint and several liability, both  
25 with respect to OCWD's statutory claims and with respect to OCWD's common law claims.  
26 Because the jury trial has not yet begun, this Statement of Decision does not address joint and  
27 several liability with respect to OCWD's common law claims. With respect to the District's  
28 statutory claims, the Court finds as follows.

1 The Orange County Water District Act does not address whether liability is joint and  
2 several or several only. In the absence of an express provision to the contrary, Civil Code section  
3 1431 provides that liability “is presumed to be joint and *not* several . . .” (emphasis added).  
4 Defendants ask the Court to judicially create an exception to Civil Code section 1431 for the  
5 District’s Orange County Water District Act claim. Defendants cite no basis or authority,  
6 however, for exempting the District’s cause of action under the Orange County Water District  
7 Act from the joint and several liability provision of § 1431.

8 The language of the Orange County Water District Act is consistent with, not contrary to,  
9 § 1431. (See Wat. Code Appen., § 40-75 [“This Act, and every part thereof, shall be liberally  
10 construed to promote the objects thereof, and to carry out its intents and purposes”]; see also  
11 *Aetna Health Plans v. Yucaipa-Calimesa Joint Unified School District*, *supra*, 72 Cal.App.4th at  
12 pp. 1189-1190 [“[Under Civil Code § 1431] . . . tortfeasors . . . must bear the risk of non-recovery  
13 from impecunious tortfeasors”]; Rest.3d Torts, Apportionment of Liability, § E18, com. d  
14 [same].) Accordingly, the Court concludes that liability under the Orange County Water District  
15 Act is joint and several.

16 The HSAA provides: “In resolving claims for contribution or indemnity, the court *may*  
17 allocate costs among liable parties using those equitable factors which are appropriate.” (Health  
18 & Saf. Code, § 25363, subd. (e) [emphasis added].) As noted *ante*, in order to conduct such an  
19 allocation, however, the Court must be presented with evidence that allows it to determine the  
20 relative contribution of each defendant to the overall harm, and the Court has not been presented  
21 with such evidence in this case. As explained below, defendants have failed to meet their burden  
22 to establish a basis for allocation.

23 Defendants may not meet their burden to show divisibility by speculating about how  
24 much of a particular defendant’s VOC molecules are in a particular extraction well. (*Board of*  
25 *County Com’rs of County of La Plata, Colorado v. Brown Group Retail, Inc.* (D. Colo. 2011)  
26 768 F.Supp.2d 1092 (*La Plata*).) In *Burlington Northern and Santa Fe Ry. Co. v. United States*  
27 (2009) 556 U.S. 599 (*Burlington Northern*), the Supreme Court stated:

28 When two or more causes produce a single, indivisible harm “courts have refused to

1 make an arbitrary apportionment for its own sake, and each cause is charged with  
2 responsibility for the entire harm.” Restatement (Second) of Torts § 433A, Comment i, p.  
3 440 (1963-1964).

4 (556 U.S. at pp. 614-615.) The *Burlington Northern* court acknowledged that under some  
5 circumstances CERCLA permits an apportionment of responsibility, but cautioned:

6 Not all harms are capable of apportionment, however, and CERCLA defendants seeking  
7 to avoid joint and several liability bear the burden of proving that a reasonable basis for  
8 apportionment exists. See [*United States v.*] *Chem-Dyne Corp.*, [S.D. Ohio 1983] 572  
9 F.Supp. [802] at 810 (citing Restatement (Second) of Torts § 433B (1976) placing burden  
10 of proof on party seeking apportionment).

11 (556 U.S. at p. 614.) As the *Burlington Northern* opinion also acknowledged, in determining  
12 issues of joint and several liability under CERCLA, Congress expected courts to look to evolving  
13 principles of common law. (*Id.* at pp. 613-614.) Perhaps the central authority for determining  
14 the evolving principles of common law is the Restatement, and, as cited *ante*, the Restatement  
15 Third has adopted the same approach to joint and several liability reflected in Civil Code § 1431.  
16 (See Rest.3d Torts: Apportionment of Liability, § E18, com. d.)

17 In *La Plata*, *supra*, the court explained the difficulties faced by defendants under the  
18 standards announced in *Burlington Northern*. The *La Plata* court cited *United States v.*  
19 *Hercules, Inc.* (8th Cir. 2001) 247 F.3d 706, 718-719, for the proposition that “when in doubt,  
20 district courts should impose joint and several liability rather than settle on a compromise amount  
21 that they think best approximates the relative responsibility of the parties.” (768 F.Supp.2d at p.  
22 1117.) The *La Plata* court also emphasized: “Equitable considerations have no relevance to the  
23 apportionment of liability under CERCLA § 107(a); rather, this apportionment must be based on  
24 evidence supporting the divisibility of damages.” (*Ibid.* [citing *Burlington Northern*, *supra*, 556  
25 U.S. at p. 615, fn. 9].)

26 As the *La Plata* court stated: “It has been recognized that determining the contribution of  
27 each cause to a single harm where there has been a commingling of contaminants often requires a  
28 very complex assessment of the relative toxicity, migratory potential, and synergistic capacity of  
the hazardous wastes at issue. [Citation.]” (768 F.Supp.2d at p. 1118.) The court went on to  
conclude: “Because the solvent contamination at the Property and offsite represents a single

1 harm that cannot reasonably be apportioned among the various responsible parties, the liability of  
2 [defendants] for La Plata's recoverable response costs under CERCLA § 107(a) shall be joint and  
3 several but subject to [defendant's] claim for contribution under CERCLA § 113(f)(1)." (*Id.* at p.  
4 1119.)

5 No defendant in this case is remediating off-site plumes that originate from their sites.  
6 Every hydrogeologist called as a defense expert in the case has claimed that there was an  
7 upgradient source of the VOC's in groundwater beneath their client's property, and that VOCs  
8 have commingled extensively in the Project area. Dr. Waddell also testified that plumes from  
9 multiple sources have commingled in the project area. The overall dimensions of the plume (4  
10 miles long by a mile wide) demonstrates the magnitude of the problem of trying to separate  
11 individual contributions by specific sites from the larger mass found in groundwater.

12 No defense expert offered an opinion with respect to how liability should be allocated  
13 among all contributors to even a single plume in the Project area. Mr. Lambie attempted to  
14 allocate the portion of the mass attributable to Northrop sites without analyzing each contributing  
15 site. In fact, he only evaluated sites specifically requested by counsel. (RT at 6632:16-20.) He  
16 also never attempted to estimate the amount of any chemical from any source that would be  
17 removed by any extraction well, despite the fact that this would be the most direct relationship  
18 between the cost of the project and VOCs from individual sites. (RT at 6633:24-26, 6634:12-  
19 15.) Mr. Lambie testified, however, that he allocated 10.4 percent of the total TCE mass in the  
20 treatment area to the three Northrop sites (TT at 6592:21-23) and 13.3 percent of the DCE mass  
21 in the treatment area to the three Northrop sites. (TT at 6593:1-3.) He did not allocate any  
22 percentage of any other chemical to Northrop because he "did not find any evidence of data that  
23 indicated [the Northrop sites] were a probable source of those chemicals." (TT at 6593:4-18.)

24 Mr. Lambie repeatedly changed his mass estimates to correct substantial errors. His  
25 original estimate was that 13,277 pounds of PCE were present in groundwater in 2010. (RT at  
26 6640:4-6.) During the first day of his deposition, however, he corrected a mistake in his analysis  
27 and changed his estimate to over 17,000 pounds. (RT at 6641:23-6642:3.) Additional  
28 corrections resulted in a 50% adjustment in his estimate of the total pounds of PCE and TCE in

1 the aquifer. (RT at 6642:9-18.) Similarly, Mr. Lambie's original estimate of the mass of  
2 perchlorate recharged in District facilities was 100,000 pounds, but during his deposition he  
3 revised that estimate down to 50,000 pounds. (RT at 6670:16 - 6671:1.)

4 Mr. Lambie, by increasing the total mass (the denominator), effectively reduced the  
5 percentage attributed to Northrop. Mr. Lambie admitted on cross-examination that to  
6 characterize the full lateral and vertical extent of contamination, it is necessary to have "hundreds  
7 of data collection points" for a single plume and that level of detail is not available for Northrop  
8 sites like Y-12. (RT at 6636:2-23.) He stated: "Q: So is it fair to say that you do not know the  
9 full vertical and lateral extent of that plume at this time? A: It think it would be impossible to  
10 know that." (RT at 6636:15-18.)

11 In the absence of sufficient data to characterize the plume, Mr. Lambie used a uniform  
12 approach for every Northrop site and assumed he could define the extent of the plume by using a  
13 30 year particle tracking analysis. (RT at 6635:3-9.) Since Mr. Lambie's calculations are based  
14 on 2010 data, the 30 year period he assumed would cover 1980 - 2010. Northrop, however,  
15 stipulated that it owned the 500 East Orangethorpe Property (EMD) from 1952 - 1995 and that it  
16 occupied the property from 1951 - 1989. (TE 1047 at 2.) Mr. Lambie therefore assumed that  
17 the first 31 years of Northrop's operations at the EMD site did not contaminate groundwater.  
18 Such an assumption is contrary to all evidence. Northrop Grumman stipulated that it leased the  
19 Y-12 property (301 E. Orangethorpe) between 1962 and 1992 and occupied the property until  
20 1994. Mr. Lambie's analysis, however, ignores any releases of VOCs between 1962 and 1980 at  
21 this site. Mr. Lambie conceded on cross-examination that Northrop had operated at the Y-12 and  
22 Kester Solder sites for more than 30 years. (TT at 6611:17:18.) Although Mr. Lambie denied  
23 that he had assumed for purposes of his calculation that Northrop contributed no contamination  
24 prior to 1980 (TT at 6611:20-24) he admitted that he assumed any contribution prior to 1980 was  
25 "immaterial." (TT at 6611:25 - 6612:6.) And although Mr. Lambie admits that the TCE plume  
26 found underneath the Y-12 site extends 2 miles downgradient, his 30 year particle tracking  
27 method concludes that only the first mile and a half of the plume is attributable to Y-12. (RT at  
28 6638:3-9, 17-26.)

1 Mr. Lambie's sweeping assumptions and dramatically revised mass estimates confirm  
2 that Dr. Fogg was correct when he testified that there is insufficient data available to accurately  
3 estimate the mass of chemicals released at individual sites. (Fogg, RT 3747:12-3748:7, 3748:18-  
4 3749:18.) They also make Mr. Lambie's conclusions regarding allocation unreliable as a basis  
5 for this Court to allocate Northrop's liability.

6 Because defendants (including Northrop) have not presented a sufficient evidentiary basis  
7 for this Court to allocate liability, liability will remain joint and several under the HSAA unless  
8 and until defendants provide a basis for allocation.

9 There is a caveat to the Court's holding with respect to joint and several liability. The  
10 District's expert Dr. Wadell testified that not all defendants' contamination will be captured by  
11 all extraction wells. EW-1, for example, is upgradient of all defendants except Alcoa, and EW-1  
12 therefore will not capture contaminants from defendants that are downgradient of EW-1.  
13 Accordingly, the Court will award damages jointly and severally against defendants only as to the  
14 extraction wells which the District's expert, Dr. Waddell, testified would capture those  
15 defendants' VOCs. Because claims against third parties were severed for a separate trial  
16 following this statutory trial and the subsequent jury trial, defendants will have an opportunity to  
17 seek allocation through contribution claims in the trial involving third party claims and cross-  
18 claims.

19  
20  
21  
22 Dated: \_\_\_\_\_

\_\_\_\_\_  
Kim G. Dunning  
JUDGE OF THE SUPERIOR COURT

# **APPENDIX A**

1 APPENDIX A (ALCOA)

2 Alcoa Plant 1 (800 South State College Boulevard, Fullerton) has contaminated and  
3 threatens to further contaminate groundwater used as a drinking water resource, forcing the  
4 Orange County Water District to incur necessary response costs that the District is entitled to  
5 recover under the Orange County Water District Act and the HSAA.

6 Alcoa owns and operates Alcoa Plant 1 and owns and operates the manufacturing  
7 operations at the site that date back to the 1960's. The site was an orchard before an Alcoa  
8 predecessor (Kaynar) started operating there in 1963. (Trial Ex. 267A-3 [hereafter "TE \_\_\_\_"];  
9 Trial Tr. pp. 790: 26-791:4, 791:19-792:10 [hereafter "TT \_\_\_\_"].) Alcoa knew the site was  
10 contaminated before it bought and took over the site operations in 2002. (See Morosky 40:3-11,  
11 83:22-84:7; TT 741:14-23; TE 267A-3; TE 282, Fig. 2.) Alcoa knew by no later than 2003 that  
12 the soil *and* groundwater at the site are contaminated with VOC's. (Morosky 65:24-68:20, 70:4-  
13 14; TE 267A-13 to 267A-14; TE 21014 [data from August 2003 report].) Alcoa bought the site  
14 from Fairchild in 2002 and has owned and operated it continuously since.<sup>1</sup> (TT 741:14-23; TE  
15 267A-3, p. 3; Morosky Designation, p. 32:4-7 [hereafter "Morosky \_\_\_\_"]; TT 6145:5-12.)

16 Alcoa and its predecessors used VOC's, including TCE and PCE, at the site for 30-40  
17 years. Vapor degreasers using large quantities of TCE and PCE were operated at the site from  
18 sometime between 1963 and 1975 to 2003. (See TE 220, 223, 227, 228, 241, 242 [degreaser  
19 permits]; see TE 240 [PCE emissions]; see TT 6430:13-22 [Alcoa expert Richard Weiss  
20 testifying he understood TCE was used in the degreasers prior to PCE]; TT 748:3-751:17 [data  
21 shows that TCE used first, followed by PCE]; TT 792:11-794:15; TT 6197:8-10; TE 252; TT  
22 6280:16-6281:14.) Alcoa continued using tens of thousands of pounds of PCE through March  
23 31, 2003, and has continued using smaller amounts of TCE thereafter. (TT 741:24:742:5,  
24

---

25 <sup>1</sup> Alcoa assumed all of Fairchild's liability for the contamination at the site, including  
26 liability Fairchild assumed from prior operators, by agreement with Fairchild. (Decl. of Matthew  
27 G. Ball in Support of Motion in Limine to Exclude Evidence Relating to the 190 W. Crowther  
28 (Microdot) Site, Ex. C & E, pp. ALCOA 011223, 01228; see also Motion in Limine to Exclude  
Evidence Relating to the 190 W. Crowther (Microdot) Site, p. 4:6 [Alcoa "assumed substantial  
environmental liabilities from Fairchild" under an earlier agreement].)

1 6180:22-25, 880:15-24, 864:7-26; Morosky 76:7-11; see TE 11789-3, 11789-9 [PCE inventory  
2 of 16,424 pounds in 2003 and 104,551 pounds in 2002]; TE 252.)

3 Alcoa acknowledges that TCE and PCE releases at the site have contaminated soil down  
4 to at least 85 feet below ground surface ("bgs") – 10 feet above the highest measured  
5 groundwater. When asked, "what is the predominant chemical released, to soil at least, at the  
6 Alcoa site?," Alcoa expert Richard Weiss testified by referring to TE 12478R, an exhibit he  
7 prepared that depicts TCE and PCE detections down to 85 feet bgs at SVW-1, a soil boring that  
8 Mr. Weiss testified was close to the "source area" (the former degreaser and plating line). (TT  
9 6372:6-26; see also TT 774:16-776:9; TT 6326:16-6327:15 [Mr. Weiss conceding that the  
10 "curse" of the sediments under Alcoa Plant 1 is that they hold the chemicals that migrate down  
11 from the surface]; TT 794:3-18, 856:14-858:12, 861:17-862:1 [TCE was released prior to 1975,  
12 and PCE thereafter]; Morosky 91:15-92:2; TT 6304:22-6305:1, 753:7-754:22, 757:6-760:4,  
13 760:15-761:14, 767:10-15, 793:14-794:2; TT 6305:2-9 [wells depicted on TE 12495R are  
14 "close" to source area]; see also TT 6272:6-6274:19 [former Alcoa employee Richard French  
15 testifying there was no containment for the degreaser before 1992, there were stains on the bare  
16 concrete under that degreaser, and PCE is "a very heavy solvent" that will "try to exit to the  
17 bottom of anything that's slightly porous"].)

18 Alcoa Plant 1 is heavily contaminated with the TCE and PCE released at the site. Soil  
19 underneath the site is heavily contaminated with TCE and PCE. (See, e.g., TT 6372:6-26 [Alcoa  
20 expert referring to TE 12478R to identify predominant chemical released at the site]; TE 267A-  
21 26, 12478R, 267A-45 [showing high levels and deep and wide distribution of PCE and TCE in  
22 soil]; TE 12495R; TT 6377:9-14 .) Groundwater at the site is contaminated with TCE and PCE  
23 at levels exceeding the Maximum Contaminant Level of 5 parts per billion ("ppb"). (See, e.g.,  
24 TT 774:16-776:9; TE 282-28 to 282-32 [contamination in onsite monitoring wells], 267A-54  
25 [contamination in onsite well SVW-1]; Morosky 87:24-89:5.)<sup>2</sup> The extent of groundwater  
26

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27 <sup>2</sup> Dr. Waddell, notably, did not opine that every VOC released at Alcoa Plant 1 has  
28 contaminated groundwater; he carefully noted that the 1,1-DCE and 1,4-dioxane in groundwater  
beneath the site came from the adjacent Aerojet facility. (TT 801:5-802:16.)

1 contamination emanating from the Alcoa site, based on observed chemical proportions under the  
2 Alcoa site and downgradient, is over 3,000 feet. (TT 878:22-881:15.)

3 Alcoa has not cleaned up or delineated its soil or groundwater contamination. In May  
4 2003, the Santa Ana Regional Water Quality Control Board directed Alcoa to investigate and  
5 remediate the contamination.<sup>3</sup> (Morosky 78:23-79:4.) Alcoa failed to even begin limited soil  
6 remediation (soil vapor extraction) until May 2009, 6 years after the Regional Board directive  
7 and over 40 years after manufacturing started at the site. (Morosky 79:16-80:11; see TE 267A-3  
8 [start of operations].) Alcoa's soil vapor extraction, its sole remedial effort, goes to at most 65  
9 feet bgs, leaving the contaminated soil below that depth unremediated. (Morosky 106:11-17; see  
10 TE 12478R, TE 282-25 [showing high groundwater level of 95.3 feet bgs at well MW-2].)  
11 Alcoa has never delineated the contamination. (Morosky 106:11-107:3.) Alcoa has conducted  
12 no groundwater remediation at the site. (Morosky 133:7-19; TT 881:12-15.)

13 Alcoa's defense is twofold. First, Alcoa appears to claim the soil contamination at Alcoa  
14 Plant 1 does not threaten groundwater and could only be deemed to threaten groundwater by  
15 regulation. (TT 3082:5-3083:4.) There is no authority for the latter proposition, and Alcoa  
16 offers none. Whether contamination threatens groundwater typically involves a case-by-case  
17 base assessment of the chemicals at issue, the nature of the subsurface, levels of contamination,  
18 history of contaminant migration at the site, and other factors. In this case, Alcoa concedes that  
19 VOC's released at the surface of Alcoa Plant 1 have already contaminated soil to at least 85 feet  
20 below ground surface, migrating through multiple subsurface layers with varying degrees of  
21 permeability (such as clays, sands, and silts) to get there.<sup>4</sup> (E.g., TT 6372:6-26; see TE 12495R  
22 [cross-section of wells including SVW-1].) Indeed, Alcoa's counsel elicited testimony that  
23 VOC's will likely pass through the clay layers underneath Alcoa Plant 1. (TT 3088:7-11 [Alcoa

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24  
25 <sup>3</sup> Alcoa is paying for all of the remedial activity at the site. (Morosky 28:19-21, 45:16-  
26 25.)

27 <sup>4</sup> Mr. Weiss incorrectly testified that there were no detections of TCE in SVW-1 below  
28 85 feet bgs. (TT 6308:8-25; see TE 267A-45 [showing TCE at 115 feet bgs].) It should also be  
noted that Mr. Weiss' cross-section exaggerates vertical depth by a factor of 5. (See TE 12495R  
[“VERTICAL EXAGGERATION = 5X”].)

1 counsel asking Dr. Waddell to confirm that VOC's are more likely to infiltrate clay layers  
2 underneath the Alcoa site the flatter the clay surface]; TT 3134:7-10 [Alcoa counsel asking Dr.  
3 Waddell to confirm that VOC's will leach out of clay layers].)

4 At Alcoa Plant 1, all of the above factors indicate that, as District expert Dr. Richard  
5 Waddell testified, Alcoa's contamination has reached and threatens to further contaminate  
6 groundwater. (TT 774:16-776:9.) Alcoa expert Mr. Weiss and former employee Mr. French  
7 testified that VOC's such as TCE and PCE are heavier than water and tend to move straight  
8 down to groundwater. (See TT 6305:10-16 [Mr. Weiss: "Again, if we think about flow – liquid  
9 migration and the unsaturated zone, it's going to be mainly downward"]; TT 6274:4-15 [PCE].)  
10 At Alcoa Plant 1, the nature of the subsurface, levels of contamination, and history of downward  
11 migration prove that TCE and PCE released at the surface have traveled down through every  
12 present soil type to at least 85 feet bgs. (E.g., TE 12478R.)

13 Alcoa offers no credible explanation why this contamination will suddenly stop at 85 feet  
14 bgs, particularly in light of Mr. Weiss' conclusion that lower permeability layers predominate  
15 below 85 feet bgs. (See TE 12495R [showing PCE (9.4 ppb) and TCE (37 ppb) detections at 85  
16 feet bgs at SVW-1, roughly 6-7 feet above a lower permeability layer that extends to lowest  
17 measured groundwater].) Indeed, Mr. Weiss conceded that Alcoa's contamination could have  
18 already migrated below that depth, but gone undetected because the detection limit for PCE and  
19 TCE in SVW-1 was 5 ppb. (TT 6373:8-6374:13.)

20 To the extent Alcoa claims its TCE and PCE will stop at 85 feet because there is no  
21 driving force such as percolating rainfall, this explanation ignores the decades in which TCE and  
22 PCE have migrated downward at the Alcoa while the site has been covered in pavement and  
23 buildings. (See TT TT 792:11-794:15 [Dr. Waddell testifying that TCE was released between  
24 1963 and 1975 and PCE was released thereafter].) This explanation would also ignore the  
25 consistent testimony of Alcoa witnesses and Dr. Waddell that VOC contamination will migrate  
26 downward independent of any driving force due to its nature (e.g., weight) and the force of  
27 gravity. (See, e.g., TT 6302:23-6303:5 [VOC's generally flow vertically downward]; TT 6272:6-  
28 6274:19; TT 709:10-710:10 [Dr. Waddell testifying that "gravity provides the energy" for

1 moving contamination down to groundwater]; see also TT 6174:5-11 [Alcoa site manager  
2 Ronald Morosky testifying that “the removal of residual VOC’s in the subsurface” to the  
3 satisfaction of the Regional Board will be required to assured that groundwater is not threatened  
4 by Alcoa Plant 1].) For all of the above reasons, and in light of the evidence at trial, the  
5 contamination released at Alcoa Plant 1, at a minimum, *threatens* groundwater.

6 Second, Alcoa claims its TCE and PCE contamination has not reached groundwater. (TT  
7 6300:14-21.) Alcoa expert Mr. Weiss offered 5 bases for this opinion: First, TCE and PCE are  
8 nondetect (“ND”) below 85 feet bgs; second, there is a different “fingerprint” between the soil  
9 and groundwater contamination underneath the site; third, the subsurface stratigraphy under the  
10 Alcoa site impedes contaminant flow; fourth, the subsurface at Alcoa Plant 1 absorbs chemicals;  
11 and fifth, all of the groundwater contamination underneath Alcoa comes from the Aerojet site.  
12 (TT 6300:14-6302:14.) None of these purported bases proves it is more or equally likely that the  
13 TCE and PCE contamination from Alcoa Plant 1 has already contaminated groundwater.<sup>5</sup>

14 Mr. Weiss first testified that the ND results between 85 feet and 115 feet bgs at well  
15 SVW-1 indicate that the contamination does not extend below 85 feet. (TT 6300:18-6301:7;  
16 6307:17-24.) Mr. Weiss failed to address, however, the limited ability of soil samples, as  
17 opposed to soil vapor samples, to detect contamination.<sup>6</sup> As Dr. Waddell testified, a soil sample  
18 is a small cube, one half inch per side, and thus has limited ability to detect contaminants,  
19 particularly at lower depths like those at Alcoa given the effects of lateral migration.<sup>7</sup> (TT812:5-  
20 813:20.) Mr. Weiss also failed to address what he ultimately had to concede – that TCE and PCE  
21 may not have been detected in SVW-1 because they were present at levels below the 5 ppb  
22

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23  
24 <sup>5</sup> Notably, Dr. Waddell testified that not every VOC released at Alcoa Plant 1 has  
25 contaminated groundwater, only TCE and PCE. (TT 801:5-802:16.)

26 <sup>6</sup> Alcoa only sampled soil vapor down to 55 feet bgs. (TT 811:15-812:7, 812:15-813:20,  
27 814:5-11.)

28 <sup>7</sup> Mr. Weiss further testified that residual TCE and PCE would only be 1-3% of the  
original mass. (TT 6307:3-24.) This increases the difficulty of detecting subsurface  
contaminants using soil samples. (TT 6375:19-6376:2.)

1 detection limit. (TT 6373:8-6374:13.)

2 Lastly, Mr. Weiss failed to address the TCE spike in groundwater at the Alcoa site  
3 following the peak in groundwater elevations in 2006. (See TE 732-78, 282-24 to 282-27 [peak  
4 groundwater elevations measured in Alcoa monitoring wells in 2006].) After this peak, TCE  
5 levels spiked in Alcoa monitoring wells as groundwater that had risen up in the soil column  
6 descended back into the well screen intervals of MW-2 and MW-I-1. (See *ibid.* [groundwater  
7 elevations in 2007-2010]; TE 282-23 [depth of well screens]; TE 282-28 [spike in TCE in MW-I-  
8 1 in 2007-2010]; TE 282-30 [spike in TCE in MW-2 in 2007-2010].) As Dr. Waddell testified,  
9 the spike in TCE levels at well MW-2 resulted from TCE mobilized from the Aerojet site, but  
10 that, at well MW-I-1, the spike results from TCE mobilized from the Alcoa source area. (TT  
11 821:12-823:8, 825:2-826:8.) Dr. Waddell testified that the timing of the groundwater peak and  
12 resulting TCE spikes demonstrate that the spike in MW-I-1 *could not have come from an off-site*  
13 *source.* (*Ibid.*; see TE 21103-22 [distance from MW-2 to MW-I-1 is approximately 4 times that  
14 of MW-2 to PW-2].) Mr. Weiss offered nothing to dispute this fact when given the opportunity.  
15 (TT 6426:14-6427:10, 6429:2-5.) TCE and PCE released at Alcoa Plant 1 has reached  
16 groundwater, and the ND results below 85 feet bgs do not indicate otherwise.

17 Mr. Weiss next testified that there is a different “fingerprint” for the soil and groundwater  
18 contamination at Alcoa Plant 1. (TT 6318:21-6319:15.) In essence, Mr. Weiss testified that  
19 because the soil underneath Alcoa Plant 1 contains only TCE while the groundwater contains  
20 TCE *and* 1,1-DCE, the groundwater must come from Aerojet. (*Ibid.*) Dr. Waddell agreed that  
21 the Aerojet site is the source of the 1,1-DCE in groundwater beneath the Alcoa site. (TT 801:5-  
22 802:16.) But, Dr. Waddell established that various pieces of evidence, including the TCE spike  
23 from 2007-2010 in MW-I-1 (see *supra*), and the fact that TCE dominates the groundwater  
24 samples at the Alcoa site while PCE dominates the groundwater samples at the Aerojet site (see  
25 *post*), show that Alcoa Plant 1 has contributed TCE contamination to groundwater. (See TT  
26 774:16-776:9 [Waddell opinion regarding TCE and PCE].) In contrast, Mr. Weiss failed to show  
27 that the detection of 1,1-DCE in groundwater under the Alcoa site eliminates Alcoa as a source  
28 of the TCE in that groundwater. TCE and PCE released at Alcoa Plant 1 have reached

1 groundwater, and the presence of 1,1-DCE in SVW-1 does not make this fact less likely.

2 Mr. Weiss next testified that the releases at the Alcoa site were "intermittent" and the  
3 subsurface impeded the downward migration of TCE and PCE, while the Aerojet site had  
4 "continuous" releases and a "straight shot" to groundwater. (TT 6326:16-6327:15.) First, Mr.  
5 Weiss did not testify as to the mechanism of release at the Alcoa site, and he acknowledged that  
6 the over 10,000 pounds of VOC's extracted from the Alcoa source area show that "a lot of  
7 contamination" was released at Alcoa Plant 1. (TT 6377:9-14.) With respect to the purported  
8 "straight shot" at Aerojet, Mr. Weiss testified that this only existed as a result of the excavation  
9 at the underground storage tank area at the Aerojet site, meaning that any releases at the surface  
10 at Aerojet prior to that excavation had to penetrate the same clay layer as the one under the Alcoa  
11 source area (and perhaps thinner than at Alcoa). (TT 6431:5-6432:3; see TE 12495R [Weiss  
12 cross-section with Aerojet excavation at right edge and showing similar clay layer at that location  
13 as in the vicinity of the Alcoa source area near SVW-1].<sup>8</sup>)

14 Perhaps most importantly, Mr. Weiss conceded that TCE and PCE released at Alcoa  
15 Plant 1 has passed through every type of lithology (e.g., clay, silt, sand) present at the Alcoa site  
16 in order to reach 85 feet bgs. (TT 6372:6-26 [when asked, "what is the predominant chemical  
17 released, to soil at least, at the Alcoa site?," Mr. Weiss testified by referring to TE 12478R, an  
18 exhibit he prepared that depicts TCE and PCE detections down to 85 feet bgs at SVW-1; TE  
19 12495R [Weiss cross-section].) To the extent there are any differences in the subsurface at  
20 Aerojet and Alcoa Plant 1, the detections of TCE, PCE, and other VOC's in soil and groundwater  
21 at both sites indicates that those VOC's have migrated through the soil to groundwater. (See also  
22 TT 768:7-9, 759:16-771:3, 771:10-772:10; TT 267A-45 [SVW-1 sampling results showing TCE  
23 and PCE detections to 85 feet bgs]; TE 21094 [same].)

24 Mr. Weiss next testified that the levels of TCE and PCE in groundwater at the Aerojet  
25

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26 <sup>8</sup> It should also be noted that the Weiss cross-section is remarkably different than any  
27 other cross-section of the North Basin area in showing a large clay "plug" centered around SVW-  
28 2 in the middle of the cross-section and, if the cross-section is accurate, the clay plug creates a  
barrier to lateral migration from the Aerojet site to Alcoa's wells. (TE 12495R; see TE 280-38  
[cross-section of Alcoa site by Alcoa consultant Mission Geoscience].)

1 site are higher than those at Alcoa Plant 1, indicating that Aerojet is the source of *all* the TCE  
2 and PCE under the Alcoa site. (TT 6344:17-6346:14; see TE 21947-1 [depicting groundwater  
3 flow direction over time from Aerojet to Alcoa].) Mr. Weiss' argument has two primary flaws:  
4 First, Mr. Weiss arbitrarily limited his data set temporally and spatially; and second, Mr. Weiss  
5 arbitrarily included a well (PW-2) that he conceded was not representative of groundwater  
6 conditions. As to the first flaw, Mr. Weiss temporally limited his data set to 2007 despite the fact  
7 that data -- including from samples taken for Alcoa -- was available for at least the period from  
8 2003-2011. (E.g., TE 282-28 to 282-32; TE 267A-54 [grab groundwater sample at SVW-1].)

9 Second, Mr. Weiss spatially limited his data by excluding grab groundwater samples,  
10 including grab samples taken at SVW-1 (by Alcoa) and the following Aerojet wells: SB-1, SB-2,  
11 SB-3 (on the northeast corner of the Alcoa site near MW-2), SB-4, and SB-5. (Compare TE  
12 21938-1 [Weiss diagram showing wells he considered in determining the relative TCE  
13 contributions from Alcoa and Aerojet], with TE 26012 [Waddell diagram for same purpose].)  
14 Mr. Weiss' explanation for excluding grab samples was that grab samples are not "reliable or  
15 reproducible." (TT 6371:10-26.) Grab samples are indeed not reproducible (TT 815:5-816:6),  
16 but there is no evidence, and Mr. Weiss offered none, to indicate that the grab samples at Aerojet  
17 or Alcoa were unreliable. (See TT 6403:3-6.) In fact, Mr. Weiss conceded that the consequences  
18 of improper sample collection would only reduce, not increase, reported levels, thereby  
19 furthering the illusion that lower levels of TCE exist at SVW-1. (TT 6402:15-6403:15.)

20 As to the second flaw, Mr. Weiss included groundwater data from PW-2. (TE 21938-1.)  
21 As Mr. Weiss conceded, PW-2 was screened in a clay layer and sampled using the "micropurge"  
22 method; it thus captured contaminants that concentrated in that clay layer, explaining why the  
23 results from PW-2 are vastly higher than those from nearby MW-2 (which is on the Alcoa site).  
24 (TT 6345:25-26 [testifying that VOC levels at Aerojet are "at least an order of magnitude" higher  
25 than those at Alcoa Plant 1]; TT 6421:9-23 [testifying that different levels between PW-2 and  
26 MW-2 is an "unusual occurrence"]; TT 6435:4-6436:5, 6436:11-16, 6436:22-6437:1, 6437:2-5,  
27 6437:23-6440:4 [explaining that PW-2 is screened in clay and sampled using micropurge and  
28 thus does not reflect conditions in the aquifer, and conceding that this is why the levels at PW-2

1 are orders of magnitude higher than MW-2]; see TT 3116:18-21 [Dr. Waddell testifying that PW-  
2 2 was not installed deep enough].) Data from PW-2 is, as Mr. Weiss conceded, not reliable.  
3 (*Ibid.*) The flaws of omission (data before or since 2007 and from grab samples) and inclusion  
4 (data from PW-2) underlying Mr. Weiss' opinion that Aerojet is the source of *all* of the TCE and  
5 PCE under the Alcoa site render his opinion unreliable.

6 Had Mr. Weiss considered all available, reliable data in forming his opinions, he would  
7 have concluded, as depicted on TE 26102 and testified to by Dr. Waddell, that TCE is higher in  
8 groundwater under Alcoa Plant 1 than it is under Aerojet, demonstrating that Alcoa Plant 1 has  
9 contaminated groundwater. (See TE 26102 [showing larger circles for SVW-1, MW-I-1, and  
10 MW-3 than for upgradient wells on the Aerojet site (SB-1, SB-2, SB-4) other than PW-2]; TE  
11 10147-269, 10147-272 to 10147-274 [groundwater data from wells on Aerojet and Alcoa sites].)  
12 Indeed, Mr. Weiss testified that this analysis was determinative of his opinions:

13 As I said before, there are many processes going on at the same  
14 time. So it's – but – and that's why we kind of stick to simple,  
15 basic principles of groundwater flow direction. I don't think  
16 there's much argument about that. And concentrations of  
17 chemicals in groundwater that higher concentrations are upgradient  
18 of lower concentrations indicate that the upgradient concentration,  
19 higher concentration is a source.

20 (TT 6441:4-11.) Additionally, the absence of any explanation by Alcoa or Dr. Weiss to counter  
21 Dr. Waddell's conclusion that the spike in TCE in Alcoa well MW-I-1 following the  
22 groundwater peak in 2006 (see *supra*) further proves that Alcoa Plant 1 has contributed TCE  
23 contamination to groundwater. In sum, had Mr. Weiss properly considered all available data, he  
24 would have concluded, as did Dr. Waddell, that Alcoa Plant 1 is a source of TCE contamination  
25 to groundwater. (TT 774:16-776:9, 817:17-825:5, 882:6-883:13.)

26 As noted above, Dr. Waddell testified that off-site data shows that the TCE and PCE  
27 plume from Alcoa Plant 1 extends farther than 3,000 feet downgradient. (TT 878:22-881:15.)  
28 Alcoa's TCE plume, at a minimum, left the site prior to any off-site remediation. (TT 866:16-  
867:5.) Dr. Waddell testified that the contaminant plume coming from Alcoa Plant 1 requires  
remediation (e.g., TT 767:6-9), and that District extraction well EW-1 will capture the Alcoa

1 plume and allow it to be treated (TT 891:18-894:7). Alcoa has never attempted to determine the  
2 mass released from its site. (TT 6446:11-22.)

3 In sum, the District has proven that Alcoa Plant 1 has contaminated and threatens to  
4 further contaminate groundwater used as a drinking water resource, which has forced the District  
5 to incur necessary response costs that the District is entitled to recover under the Orange County  
6 Water District Act and the HSAA.

# **APPENDIX B**

## APPENDIX B (CRUCIBLE)

Crucible has admitted that it occupied the property at 2100 East Orangethorpe between approximately March 18, 1957, and July 8, 1959, and November, 1985. June 29, 2012, T.T. at 4341:13 - 4342:3.) Crucible also admitted that it used TCE and TCA as solvents to degrease tubing by immersion. (T.T. at 4343:7-26 [TCE] and 4344:3-13. [TCA].) Crucible objected to its own response to the District's request for admissions of the property at 2100 East Orangethorpe between 1957 and 1985 on the basis that the admissions were "cumulative" of Ex. 11815. (T.T. at 4339:21-26.) To the extent Ex. 11815 differs from Crucible's response to the District's request for admissions, therefore, Crucible should be estopped from asserting any such differences.

Dr. Waddell testified that VOC's were released from the degreaser used by Crucible at this site. (April 26, 2012, T.T. at 1588:5-15.) Dr. Waddell also testified that VOC's were released from an area at the South of the Crucible building where both waste chemicals and virgin chemicals were stored. (T.T. at 1588:16-23.) Dr. Waddell testified that PCE, TCE, 1,1,1-TCA that degraded to 1,1-DCE, and 1,4-dioxane from the Crucible site have all contaminated groundwater at the site. (T.T. at 1590:4-9; 1610:1-4; 1612:4-25; 1613:14-17; 1616:22 - 1617:1.)

Dr. Waddell testified that PCE was used at this site in a window of time between 1968 to 1976. (T.T. at 1607:1-2.) He testified that TCE was used at the site both before and after this window of PCE use. (T.T. at 1607:2.) He also testified that 1,1,1-TCA would have been released at the site between 1980 and 1984. (T.T. at 1607:9-10.) (*See also* Ex. 397 [California EPA RCRA Assessment] at iv ["Constituents of concern used at the facility include tetrachloroethane (PCE), trichloroethane (TCA), trichloroethylene (TCE), nitric acid, hydrofluoric acid, hexavalent chromium, nickel, lead, and waste oil."].)

Soil gas sampling documented releases at the degreaser, the waste storage area, and at the southern property line. (T.T. at 1595:18-24. *See also* Ex. 10147- 159 and 160 [data from soil gas measurements].) Soil samples taken during a limited set of tests in 1985 detected TCA at levels of 780 ppm (7,800 ppb), PCE at levels of 21 ppm (2,100 ppb) and TCE at levels of 70 ppm (7,000 ppb). (Ex. 392 at Table 1) Dr. Waddell determined that the VOC's measured at the

1 Southern property line between Crucible and Vista Paint came from the Crucible site, based upon  
2 the constituents that Crucible had used. (T.T. at 1596:26 - 1597:2.)

3 Samples collected from groundwater in a perched zone at the Western edge of the  
4 Crucible site contained TCE, PCE, 1,1,1-TCA and 1,1-DCE. (T.T. at 1604:13-14. *See* Ex.  
5 10147-230 [perched groundwater measurements at 72 to 76 feet below ground surface in CM-  
6 GW02 and CM-GW03.]. Dr. Waddell testified that the contaminants in this perched zone came  
7 from the Crucible site. (T.T. at 1606:8-10.) Dr. Waddell also testified that the contaminants in  
8 the subsurface at this site have contaminated groundwater and will continue to be a source of  
9 groundwater contamination. (T.T. at 1609:22 - 1610:4.) (*See also* Ex. 397 [California EPA  
10 RCRA Assessment] ["Orange County Water District sampling wells in the area of the former  
11 Trent Tube facility show significant PCE and TCE contamination. PCE and TCE were used and  
12 released at the former Trent Tube facility."].)

13 Crucible's expert Dr. Kopania was not retained until trial was underway. Dr. Kopania  
14 admitted that every VOC sample taken in groundwater wells West of the Crucible site was higher  
15 than groundwater samples taken East of the Crucible site. (T.T. at 6849:13-17.) He also admitted  
16 that the general direction of groundwater flow in the shallow aquifer in the vicinity of the  
17 Crucible site was from East to West. (T.T. at 6785:23 - 6786:3.)

18 Dr. Kopania testified with respect to one time grab samples of groundwater collected by  
19 the Orange County Water District that: "The one time sampling event doesn't provide you  
20 reproducible data, and it doesn't provide you any indication of changes or trends that might have  
21 occurred over time." (T.T. at 6772:19-22. *See also* T.T. at 6771:9-19.) Dr. Kopania  
22 nevertheless relied entirely on these one time grab samples to conclude that the surface of the  
23 perched water beneath the Vista Paint and Crucible sites was "tilted towards the East, indicating  
24 a general flow direction towards the East." (T.T. at 6782:23-26. Objections based on a lack of  
25 foundation were overruled with the observation that the lack of foundation went to the weight,  
26 not the admissibility, of the testimony. (T.T. 6786:8-15.) In light of Dr. Kopania's own  
27 testimony, his opinion based upon these one time grab samples should be given little, if any,  
28 weight.

1 Dr. Waddell confirmed in rebuttal that Dr. Kopania's reliance on one time grab samples  
2 as a key basis for his opinion was inappropriate. Although Dr. Waddell agreed with Dr. Kopania  
3 with respect to the one-time data on the day the samples were taken he explained: "I think the  
4 dominant direction of flow is East to West." (August 27, 2012, TT at 7452:5-20.)

5 Dr. Kopania admitted on cross-examination that well CM-GW04 was approximately 600  
6 feet to the West of Vista Paint's operations. (T.T. at 6822:7-9.) He also admitted that there had  
7 been no soil or soil gas detections of 1,4 dioxane between Vista Paint's operations and CM-  
8 GW04. (T.T. at 6822:14-18.) Dr. Kopania conceded that he had concluded that VOC's had  
9 traveled some 600 feet West of the Vista Paint property without any soil or soil gas data to  
10 support that conclusion, yet had also concluded that VOC's at the Crucible site had *not* migrated  
11 less than 100 feet down to groundwater based upon several non-detections of VOC's in the  
12 subsurface at Crucible. (T.T. at 6822:14 - 6823:9.) This is simply not credible.

13 Dr. Kopania testified that in his opinion the PCE detected in perched groundwater at the  
14 Crucible site came from Vista Paint, but he admitted that he had no evidence that PCE was ever  
15 used at the Vista Paint site. (T.T. at 6851:4-7.) In contrast, Dr. Kopania admitted that PCE,  
16 TCE and TCA were used and released at the Crucible site. (T.T. at 6810:5 - 6811:4.) Dr.  
17 Kopania also admitted that VOCs in the vicinity of Crucible and Vista Paint can and do migrate  
18 down to groundwater despite the presence of clay lenses or layers in the subsurface at those sites.  
19 (T.T. at 6817:2-6.)

20 Dr. Waddell testified in rebuttal that there was no evidence of PCE use at the Vista Paint  
21 site, and that the pattern of contamination in the groundwater beneath the Crucible site was  
22 consistent with Crucible as the source. (TT at 7454:9-10; 7455:5-9.) Dr. Waddell also testified  
23 that Dr. Kopania's opinion that Well MW-23 was not downgradient of the Crucible site was  
24 inconsistent with data showing groundwater flow direction towards Well MW-23. (TT at  
25 7456:1-11. Dr. Waddell also testified that Dr. Kopania's references to the absence of acetone in  
26 Well MW-23 were misleading because AC Products was not measuring acetone concentrations  
27 in that well. (TT at 7456:15 -7457:5.) In short, Dr. Kopania's opinion is based on minimal data  
28 and improperly ignores more relevant and critical data, and nothing in Dr. Kopania's testimony

1 caused Dr. Waddell to alter his opinion that Crucible is a source of VOC contamination in  
2 groundwater. (TT at 7445:5-13.)

3 Dr. Waddell testified that contamination from the Crucible site will be captured primarily  
4 by EW-3 and EW-4. (T.T. at 1636:25-26.) He also testified that if the contamination moved  
5 downward sufficiently it would be captured by EW-3A. (T.T. at 1637:7-11.) Crucible offered  
6 no testimony to rebut Dr. Waddell's conclusion, other than the opinion of Dr. Kopania that  
7 VOC's from Crucible had not reached groundwater at all.

8 The District has proven that Crucible has contaminated and threatens to further  
9 contaminate groundwater used as a drinking water resource, forcing the District to incur  
10 necessary response costs that the District is entitled to recover under the Orange County Water  
11 District Act and the HSAA.

# **APPENDIX C**

[illegible]

Arnold owned and occupied the site at 1551 East Orangethorpe Avenue from 1960 to 1986 or 1987. (Trial Ex. 1049-2 [hereafter “TE \_\_\_”]; Trial Tr., p. 1004:2-4 [hereafter “TT \_\_\_”]; TT 6995:19-6996:8 [Arnold expert John Rohrer testifying that solvents were used in degreasers at the Arnold site throughout the period from 1960 to 1986 or 1987].) Testimony and data in this case establish that the Arnold used VOC’s at the site, including 1,1,1-TCA, TCE, and PCE, in various applications from 1960 until 1986 or 1987.

Second, Arnold used PCE as a “stripper” in a separate part of its manufacturing process from at least the mid-1970's until it left the site in 1986 or 1987. (Hopen Testimony, TT 2257:24-2260:12.) Runoff from the stripping operation flowed along the concrete floor of the site to a clarifier prior to discharge to the sewer. (See TT 2209:25-2211:1, 2211:23-2212:3,

1 2212:9-25, 2215:13-2216:2, 2224:1-15 [former Arnold employee Renee Otero testifying that  
2 “stripper solution” was regularly spilled onto a wooden work platform and underlying concrete  
3 floor and, at Arnold’s direction, was regularly washed down to the concrete floor]; TT 2270:9-  
4 2271:11 [Mr. Hopen testifying that the liquid washed down from the stripper area went to a  
5 clarifier and then the sewer]; TE 23751-48 to 23751-49, p. 149:4-25 [same]; TE 23751-49, p.  
6 150:1 to 23751-59, p. 177:11 [former Arnold employee Don Farmer changing prior testimony,  
7 acknowledging lack of personal knowledge of VOC use by Arnold, and acknowledging that he  
8 did not know what solvent was used in the stripping operations]; see also TT 1007:10-15 [a  
9 clarifier was installed at the Arnold site in 1960, and three more were permitted by 1974].)

10 Arnold’s expert Mr. Rohrer testified that the TCE and PCE detected in borings BH-14  
11 and BH-15 down to 100 feet bgs came from a release “at or near” the southern clarifier at the  
12 site.<sup>1</sup> (TT 7005:16-7006:3, 7007:15-23; see TT 7015:7-20 [Mr. Rohrer testifying that PCE was  
13 released near the southern clarifier and conceding that the only evidence of PCE use is during  
14 Arnold’s ownership and occupancy of the site]<sup>2</sup>; TT 7022:6-11; TE 552-7 [map showing  
15 southern clarifier]; 10339-8 [map showing borings BH-14 and BH-15].) In fact, the evidence of  
16 solvent use and VOC sampling show that Arnold released, at a minimum, TCE, PCE, and 1,1,1-  
17 TCA and its byproduct 1,1-DCE at the site. (See TE 10147-30 to 10147-32, TE 10147-144 to  
18 10147-146 [high levels of PCE, TCE, 1,1,1-TCA, 1,1-DCE, and other VOC’s in shallow soil and  
19 soil vapor at Arnold site]; TT 1009:4-17; TE 552-8 & 552-10 [high levels of PCE in shallow soil  
20 near the southern clarifier]; TE 563-12 [high levels of VOC’s in shallow soil vapor samples at  
21 the Arnold site] 1011:23-1013:14 [high levels of PCE near southern clarifier indicate a release at  
22 that location that requires remediation]; TT 1017:21-1019:10, 1020:22-1022:9 [practices  
23 associated with the degreasers and southern clarifier that caused releases at the Arnold site],  
24

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25  
26 <sup>1</sup>Groundwater has not been measured on the Arnold site, but it has been found as shallow  
as 90.6 feet bgs in well MW-2 at the adjacent Johnson Controls site. (TT 7008:5-14.)

27 <sup>2</sup> In opining that the data shows releases of TCE and PCE at the Arnold site, Mr. Rohrer  
28 contradicted his earlier-expressed opinion. (TT 6900:12-24.)

1 1022:18-1027:17 [failed soil remediation, history of soil sampling, and use of 1,1,1-TCA, TCE,  
2 and PCE at the Arnold site], 1051:1-11 [the practice of changing solvent out of the Arnold  
3 degreaser caused solvent releases], 1044:20-1048:4, 1048:12-23 [describing the areas of solvent  
4 releases by Arnold shown by shallow soil vapor sampling in 2007]; TE 561 [2007 soil vapor  
5 sampling report showing high levels of TCE, PCE, 1,1,1-TCA, and 1,1-DCE at 5 feet bgs]; TT  
6 7000:3-, 7000:24-7001:3 [Mr. Rohrer testifying that detections in soil to approximately 30 feet  
7 bgs are a criteria he used to determine whether a release occurred at the surface]; TT 1045:21-  
8 1046:12 [identifying multiple release locations].)

9 Groundwater data from well MW-2 on the adjacent Johnson Controls site, as well as  
10 groundwater data from samples taken by the District in 2010, show that TCE, 1,1,1-TCA, and  
11 1,1-DCE from the Arnold site have contaminated groundwater. (See TT 1055:24-1065:7 [Dr.  
12 Waddell testifying that Arnold caused the contamination in monitoring wells at Johnson  
13 Controls, and discussing the support for that opinion in the differing evidence of solvent use at  
14 Arnold and Johnson Controls, and in the groundwater data related to TCE and 1,1-DCE],  
15 1077:12-21 [Arnold contaminated groundwater with 1,1-DCE]; TE 10147-194 to 10147-195  
16 [higher levels of TCE, 1,1-DCE, and 1,4-dioxane at downgradient groundwater samples FAE-  
17 GW-2 and FAE-GW-3 than at upgradient sample FAE-GW-1]; TE 726AA-4 [locations of  
18 groundwater samples including FAE-GW-1, FAE-GW2, and FAE-GW-3]; TT 1097:14-1099:25  
19 [VOC's below 60 feet bgs, the reach of soil remediation conducted at the Arnold site, are  
20 responsible for the VOC's in groundwater at the site]; TE 10147-144 to 10147-146, TE 23678-30  
21 [TCE in shallow soil vapor higher at Arnold than Johnson Controls; in fact, 45 soil vapor  
22 samples at Arnold detected TCE above 33 ppb, the maximum detected at Johnson Controls].<sup>3</sup>)

23 Groundwater at the Arnold site is contaminated with TCE and 1,1-DCE released by  
24

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25 <sup>3</sup>These samples are the following: PW1-25, PW1-60, PW2-60, SV-1, SV-1 D, SV-10,  
26 SV-12, SV-14, SV-18, SV-18 PT1V, SV-18 PT7V, SV-19, SV-20, SV-22, SV-22 DUP, SV-23,  
27 SV25-15, SV25-5, SV27-15, SV27-5, SV-3, SV-30-5, SV-31-15, SV31-15 DUP, SV32-5,  
28 SV33-15, SV33-5, SV34-14, SV35-15 3PV, SV35-15 7PV, SV-5, SV-6, SV-7, VEW12-5,  
VEW12-60, VEW3-15, VEW3-25, VEW4-15, VEW4-15 DUP, VEW4-25, VEW5069, VEW6-  
15, VEW9-15, VEW9-29, and VEW9-5.

1 Arnold, and the residual contamination not being affected by the limited soil remediation at the  
2 site (i.e., contamination below 60 feet bgs) threatens to further contaminate groundwater. In the  
3 only groundwater sampling targeted at the site, TCE was detected at up to 85.7 ppb, 1,1-DCE  
4 was detected at up to 9.2 ppb, and 1,4-dioxane (a stabilizer commonly added to 1,1,1-TCA) was  
5 detected at up to 11.5 ppb in samples taken immediately downgradient from the Arnold site. (TE  
6 10147-194 [results from 2010 samples at FAE-GW-2 and FAE-GW-3].) In groundwater  
7 sampling in 2007 at well MW-2 on the Johnson Controls site (which Dr. Waddell testified  
8 contained contamination from the Arnold site), TCE was detected at up to 290 ppb and 1,1-DCE  
9 was detected at up to 88 ppb. (TE 10147-194; see TT 1105:2-22 [Dr. Waddell indicating that the  
10 contamination in these wells is from Arnold and that the TCE and 1,1-DCE contamination  
11 exceeds MCLs and requires remediation].) As Dr. Waddell testified, soil remediation at the  
12 Arnold site has not reached below 60 feet bgs, and the contamination below that level has  
13 reached groundwater. (TT 1097:14-1099:25.) As Dr. Waddell also testified, and about which  
14 there is no dispute, no groundwater remediation has been conducted to address the Arnold plume.  
15 (See TT 1106:1-6 [Arnold has done no remediation at the site, and no one has done anything to  
16 address the off-site contamination from Arnold].) Soil underneath the site remains heavily  
17 contaminated with TCE, PCE, 1,1,1-TCA, 1,1-DCE, and other VOC's. (See TE 10147-144 to  
18 10147-146 [soil gas results from 2007-2009]; see TE 563-12 [locations of soil vapor samples].)

19 North Basin Groundwater Protection Project extraction well EW-3 will extract  
20 contamination coming from the Arnold site, and EW-2 and EW-2A are likely to do so, allowing  
21 that contamination to be treated. (TT 1106:19-1107:9, 1108:24-1109:21.) Absent treatment by  
22 the District, the TCE and 1,1-DCE – the latter of which results from Arnold's release of 1,1,1-  
23 TCA – from the Arnold site will continue to spread. (TT 1109:22-1111:6.)

24 Arnold claims that it did not contaminate soil or groundwater. (TT 6900:12-24, 6901:5-  
25 18, 6902:23-6903:18.) Arnold's subsequent acknowledgment that the data shows that releases of  
26 TCE and PCE did in fact occur at the Arnold site undermines both of Arnold's claims. (See TT  
27 7005:16-7006:3, 7007:15-23, 7015:7-20 [Arnold's acknowledgment that soil data indicates a  
28 release near the southern clarifier].) Arnold sought on cross-examination of Dr. Waddell and

1 through direct examination of Mr. Rohrer to attribute the VOC contamination at the Arnold site  
2 to off-site sources or subsequent occupants of the Arnold site. Mr. Rohrer, however, conceded  
3 he had no data to indicate VOC use or releases by subsequent operators, that he was not offering  
4 an opinion that sites other than Johnson Controls caused any groundwater contamination, and  
5 that Johnson Controls, at most, contributed only TCE and PCE contamination to groundwater,  
6 not 1,1,1-TCA (and thus not the byproducts of 1,1,1-TCA – 1,1-DCE and 1,4-dioxane – that  
7 have been found in groundwater in wells FAE-GW-2 and FAE-GW-3). (See TT 7010:22-  
8 7013:6, 7027:5-8 [Arnold has no evidence of VOC use or releases by subsequent occupants of  
9 the site], 7030:12-15 [no opinion that Sundstrand contaminated groundwater], 7042:18-7043:18  
10 [no opinion that Jonathan Manufacturing contaminated groundwater], 7047:8-7048:5 [no opinion  
11 that Vista Paint contaminated groundwater], 7049:2-16 [Rohrer does not believe Johnson  
12 Controls released 1,1,1-TCA].)<sup>4</sup>

13 Finally, Arnold claimed that it could roughly calculate the “potential” mass of VOC’s  
14 contributed by the Arnold site to extraction well EW-3. (TT 6932:24-6939:24 [indicating that  
15 calculation was made and basis for calculating aquifer thickness].) Mr. Rohrer, however,  
16 conceded on cross-examination that he did not know the thickness of the aquifer, and he  
17 estimated the thickness from work done for the AC Products site approximately 500-1,000 feet  
18 away. (TT 7055:20-7061:6.) Mr. Rohrer further conceded that expanding the aquifer thickness  
19 expands the mass in his calculation on a 1:1 basis, meaning that if the aquifer is 30 feet thick at  
20 Arnold, instead of the 15 feet he assumed, his mass calculation would double. (*Ibid.*) Mr.  
21 Rohrer, in short, conceded he has no reliable basis for this calculation, and Arnold therefore has  
22

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23  
24 <sup>4</sup>To the extent Arnold may attempt to claim that any nondetect results in soil borings  
25 down to groundwater establish that its contamination did not reach groundwater, that simplistic  
26 position has been debunked in this case. (See, e.g., TT 5385:3-6 [Northrop expert Glenn Tofani:  
27 “So its not unusual to excavate a boring away from the point of release and go through a zone of  
28 clean soil before you get to an area where the contamination has mushroomed out, so to speak.”];  
TT 6376:10-14 [Alcoa expert Richard Weiss: “Q If contamination is coming down from the  
surface and it hits clay, the most likely outcome is that it would puddle up on top of the clay for a  
while and then move laterally to some degree, correct? A Yes.”].)

1 no mass calculation on which the Court can rely.

2       The District has proven that Arnold has contaminated and threatens to further  
3 contaminate groundwater used as a drinking water resource, forcing the District to incur  
4 necessary response costs that the District is entitled to recover under the Orange County Water  
5 District Act and the HSAA.

# **APPENDIX D**

APPENDIX D (CBS)

CBS acquired the property located at 500 South Raymond on January 4, 1965, and sold that property on or about May 6, 1983. (Trial Ex. 1048, at 2 (CBS Stipulation)). Defendant CBS also acquired property consisting of 14.05 acres at 1300 Valencia on December 31, 1965, and acquired an additional 7.4 acres with the same address on or about May 19, 1966. (Trial Ex. 1048, at 1.) CBS conducted manufacturing operations at both addresses for some twenty years, until it ceased operations in 1985. (August 2, 2012, Testimony of John Cherry, T.T. at 5772:6-7 and 19-26.) CBS sold all of the property it owned at 1300 Valencia on or about March, 1986. (Trial Ex. 1048, at 2.)

CBS used PCE as a degreaser at the 500 South Raymond property. (Testimony of John Cherry, August 2, 2012, T.T. at 5786:1-4; 5787:3-11.) The PCE was stored in an above ground tank, first inside and then outside at the 500 South Raymond site. (T.T. at 5786:21 - 5787:2.)

PCE was detected in soil, soil gas and groundwater in the vicinity of the former degreaser and PCE storage tank locations. (April 23, 2012, Waddell Testimony, T.T. at 1142:19 - 1144:9; 1172-3 to 1173-2; Ex. 10147-111, 112 [soil data for 500 South Raymond] [see particularly data for CBS GW-1, showing detections of PCE at 310 ppb 70 feet below ground surface][location of CBS GW-1 near former degreaser is reflected on Ex. \*\*\*]; 10147-172 to 175 [soil gas data for 500 South Raymond] [locations of soil gas vapor sampling are reflected on Ex. 531-66]; Ex. 512 [soil gas data for 500 South Raymond]); Ex. 10147-267 [groundwater data for 500 South Raymond, showing 24.5 ppb PCE in groundwater at a depth of 119 to 129 feet below ground surface in CBS GW01].)

Dr. Waddell testified, based on the above data: "My opinion is that CBS released PCE into the environment, that that release of PCE has resulted in contamination of the groundwater." April 23, 2012, T.T. at 1154:3-5; *See also* T.T. at 1204:10-15. Although Dr. Waddell was cross-examined extensively about PCE contamination at the Chicago Musical Instruments (CMI) site to the North of the CBS site, Dr. Waddell had fully accounted for the data from CMI and it did not change his opinion that PCE from 500 South Raymond, *along with* PCE from CMI and other locations, had contaminated groundwater. May 22, 2102, T.T. at 3279:15 - 3280:14. This was in

1 part because PCE was detected at 310 ppb at 70 feet below ground surface in CBS-GW01, a well  
2 installed near the tank where CBS stored PCE. T.T. at 3280:23-25. *See also* Ex 10147-111 to  
3 112 (PCE detections down through soil). Groundwater samples taken in CBS GW01 at 119 to  
4 129 feet detected PCE concentrations of 24.5 and 25.5 ppb. Ex. 10147-267.

5 CBS's expert Dr. Stephens admitted that a former CBS consultant, Adrian Brown, had  
6 concluded based on groundwater sampling he conducted at 500 South Raymond that PCE  
7 concentrations were higher downgradient of the 500 South Raymond Ave. degreaser than  
8 upgradient. August 3, 2012, T.T. at 6041:8-16. CBS replaced Mr. Brown with Dr. Stephens,  
9 and Dr. Stephens then disagreed with Mr. Brown with respect to groundwater flow direction.  
10 T.T. at 6042:2-9. Dr. Stephens also testified, however: "You've got to remember, groundwater  
11 direction is changing and what is present at the time – the direction the groundwater flowed  
12 present at the time the water samples were taken was likely not the same direction the  
13 groundwater flowed in the year or so prior to that time to get to that monitoring well because of  
14 this shifting groundwater flow direction and the convergence area that we're in." (T.T. 6043:18-  
15 25.) Dr. Stephens also testified with respect to groundwater flow direction that the direction was  
16 generally East to West "and at times to the Southwest and at other times a little to the  
17 Northwest." T.T. at 6076:8-12.) In other words, while Dr. Stephens assumed groundwater  
18 flowed from the Chicago Musical Instruments site towards the CBS site for purposes of  
19 concluding that PCE in groundwater beneath 500 South Raymond came from CMI, he elsewhere  
20 conceded that groundwater flow direction "shifted" over time, and would flow East to West,  
21 Northwest to South and South.

22 Dr. Stephens also conducted an isotopic analysis of PCE in soil and groundwater at the  
23 CBS site. T.T. at 6044:25 - 6045:6 and 6045:24 - 6046:6. Although Mr. Brown's firm  
24 performed this analysis in an attempt to determine likely sources of the PCE in groundwater  
25 beneath the site, when asked whether the data showed that PCE in the soil at 500 South Raymond  
26 was similar to the PCE in the groundwater at 500 South Raymond, he testified: "I'm not sure  
27 what I can say about this data. I'm not sure how reliable it is because of the low concentrations.  
28 And again, I[ve] got to preface this, I'm not an isotope geochemist." (T.T. at 6046:21-24. *See*

1 also T.T. at 6051:6 - 6052:11.) In reaching his conclusion that CBS had not contaminated  
2 groundwater beneath 500 South Raymond with PCE, Dr. Stephens thus had to disavow both the  
3 conclusion of CBS's own prior consultant and the isotopic analysis performed by Dr. Stephens  
4 himself on CBS's behalf.

5 Although CBS has argued that several "non-detects" for PCE beneath the 310 ppb found  
6 at 70 feet below 500 South Raymond is evidence that CBS's PCE did not migrate to  
7 groundwater, Dr. Waddell testified that he would not expect PCE contamination to be found in  
8 every soil sample taken from any particular bore hole down to groundwater, because  
9 contamination moves laterally as it migrates downward and encounters less permeable soil.  
10 (April 23, 2012, TT at 1198:24-1200:11.) Other defense experts agreed with this as a general  
11 proposition. (See July 27, 2012, T.T. at 5385:3-6 ["So its not unusual to excavate a boring away  
12 from the point of release and go through a zone of clean soil before you get to an area where the  
13 contamination has mushroomed out, so to speak."] [Testimony of Glen Tofani.]) . CBS's expert  
14 Dr. Stephens never refuted this basic principle.

15 The District also established that PCE was present in soil and groundwater in the  
16 subsurface beneath the former CBS property at 1300 East Valencia. When the soil was first  
17 tested for PCE at the location of a former CBS dip tank, several years after CBS vacated the  
18 property and before the property was used for any other purpose, PCE was detected at 10 feet  
19 below ground surface at a concentration of .8 ppm, or 800 ppb. (See Ex. 473, at 3 [sampling  
20 results] and 4 [map showing location of sampling].)

21 Additional soil samples taken in the vicinity of the former CBS dip tank in 2001  
22 continued to show the presence of PCE, at concentrations of 160 to 210 ppb at 10 feet below  
23 ground surface and 15 and 83 ppb at the deepest measurements taken (40 feet below ground  
24 surface) (Ex. 505, at MAG 001533 and MAG 001542; Ex. 10147-22 [SB-3 and SB-4].)  
25 Additional subsurface soil testing in 2002 found levels of PCE as high as 230 ppb at 50 feet  
26 below ground surface, with PCE detections continuing down to 70 feet below ground surface, the  
27 deepest level sampled. (Ex. 507b, Figure 2 [pg 29 of 369] [showing location of SB-8 in former  
28 dip tank area]; Ex. 10147-22 [PCE results from SB-8]).

1 Dr. Waddell testified based on the above data that CBS contaminated the dip tank area  
2 with PCE. (April 23, 2012, T.T. at 1161:15-24.) Groundwater monitoring wells were installed  
3 at 1300 Valencia at the direction of the Regional Board in 2002. (Ex. 10667-1.) Dr. Waddell  
4 testified, based on the results of sampling from those wells, as well as results soil sampling for  
5 PCE, that PCE released by CBS at 1300 Valencia had contaminated groundwater. (T.T. at  
6 1181:8 - 25; 1182:15-20.) In particular, Dr. Waddell noted that PCE concentrations in the  
7 downgradient wells at 1300 East Valencia increased during the testing period, while TCE levels  
8 were decreasing. (*Id.* See also Ex. 507b, Figure 2 [pg 29 of 369] [showing locations of  
9 monitoring wells] and Ex. 10147- 193-194 [showing PCE detections in MW-1 increasing from  
10 2.8 ppb to 9.4 ppb, and MW-4 increasing from 3.5 ppb to 35 ppb].) In addition, PCE was  
11 detected at concentrations as high as 380 ppb in perched groundwater at 1300 East Valencia.  
12 (See Trial Ex. 10147, pp. 10147-193, 10147-194 [showing PCE detected in Well HP-2 in  
13 groundwater at a depth of 65 feet at 1300 East Valencia.]

14 Although Dr. Stephens speculated that PCE detected in the location of the former dip  
15 tank may have come from the Monitor Plating site to the West (downgradient) of 1300 East  
16 Valencia, he offered no opinion that Monitor Plating was in fact a source, only that he could not  
17 rule it out. (T.T. at 6108.) He conceded that he had no evidence that PCE was ever even used at  
18 the monitor plating site (T.T. at 6108:14-17) He also conceded that no sampling had occurred at  
19 the Monitor Plating site. (T.T. at 6108:20-24.)

20 The Regional Water Quality Control Board also concluded: "Board staff informed  
21 Arcadis that the VOCs detected in the soil and groundwater samples collected in the southwest  
22 portion of the site are attributable to leakage from the solvent degreaser and possibly from the  
23 former dip tank and therefore, former activities at the site have impacted the soil and  
24 groundwater." (Ex. 10667-4). The Board concluded: "It is apparent that VOC's from this site  
25 have impacted groundwater." (Ex. 10667-5).

26 Dr. Stephens speculated that unknown third parties may have disposed of PCE at 1300  
27 East Valencia by stating that in aerial photographs: "That site was disturbed to a great extent and  
28 unsecured, I believe, for a considerable period of time, making it consistent with dumping by

1 others after CBS left.” (August 3, 2012, T.T. at 6064.) Dr. Stephens was unaware of the cause  
2 of the “disturbance” he referenced, and could not rule out contractor demolition activity as the  
3 cause. (T.T. at 6065:18-21 [“I just don’t know one way or the other.”]) Dr. Stephens was  
4 apparently unaware of John Cherry’s testimony that the security fence CBS constructed around  
5 the property was still intact when Mr. Cherry visited the site several years after CBS departed, in  
6 order to answer questions from environmental consultants in advance of new construction. (R.T.  
7 at 5824:18 - 5825:8 and 5830:8-10.) Dr. Stephens admitted being aware that “dirty solvent” and  
8 “perchloroethylene” had been picked up by a waste disposal company from 1300 East Valencia.  
9 (T.T. 6056:17 - 6057:8)

10 Dr. Waddell testified that PCE contamination in groundwater from 500 South Raymond  
11 and 1300 Valencia will be captured by EW 2 and EW2A of the North Basin Groundwater  
12 Protection Project (NBGPP). April 23, 2012, R.T. at 1244:2-19. In addition, Dr. Waddell  
13 testified that some PCE from the site had already moved beyond EW-2. R.T. at 1244:20-21.  
14 CBS offered no expert testimony to refute Dr. Waddell’s opinions, other than the general  
15 testimony of Dr. Stephens that he did not believe any PCE from CBS had contaminated  
16 groundwater.

17 The District has proven that CBS has contaminated and threatens to further contaminate  
18 groundwater used as a drinking water resource, forcing the District to incur necessary response  
19 costs that the District is entitled to recover under the Orange County Water District Act and the  
20 HSAA.

# **APPENDIX E**

## APPENDIX E (KESTER SOLDER)

Northrop Grumman Systems Corporation (NGSC) admits it has owned the site at 1730 North Orangethorpe Park (Kester Solder) since 2001. (TE 1051, at 2:2-3 [Northrop's Kester Solder Stipulation].) NGSC admits it has occupied the Kester Solder site since 2001. (TE 1051, at 2:4-5.) NGSC admits solvents were stored at Kester Solder. (TE 1051, at 2:6.) NGSC admits perchloroethylene (PCE) has been found in the soil at Kester Solder. (TE 1051, at 2:7-8.) NGSC admits that the facilities located at Kester Solder mixed and re-packed industrial solvents of perchloroethylene (PCE) and alcohols, and the perchloroethylene (PCE) was stored and blended in 55 gallon drums at a chemical storage area on the east side of the chemical mixing and storage room. (TE 1051, at 2:9-12.)

Mr. Tofani testified that Kester started using PCE not long after the facility started operating in 1968. (TT 5389:8-12.) Mr. Tofani testified that PCE was used at the Kester site for quite a few years before the first testing. (TT 5395:4-6.) Mr. Tofani testified that PCE was found at the Kester site in the first groundwater testing and in the first thorough soil testing. (TT 5395:7-5396:4.) Mr. Tofani testified that PCE was used at the Kester site for several decades. (TT 5396:9-12.) TCA was used at the Kester site from at least 1983. (TT 1320:4-14.)

Mr. Tofani testified that there were releases of VOCs at the Kester site that have contaminated groundwater. (TT 5367:17-24.) Mr. Tofani testified that there was one or more releases of PCE in the drum storage area along the eastern edge of the Kester site. (TT 5197:17-24.) A site plan for the Kester site, created by Mr. Tofani's office at his direction, depicts the PCE concentration in the soil of the shallow depth before the remediation activities were performed at the site. (TE 15710; TT 5197:25-5199:24 [Tofani testimony], 5199:25-5200:7 [Ex. 15710 admitted].) As reflected on the site plan, the general area of the PCE releases is bounded by the green line that has the "10,000" label on it, that represents a concentration of 10,000 ug/kg of PCE at a shallow depth. (TE 15710; TT 5200:16-23.) On the site plan, the area of the box attached to the east side of the building, that at the top is labeled "Empty Drum Storage Area," is the apparent release location. (TE 15710; TT 5200:24-5201:1.) Mr. Tofani testified that soil vapor extraction wells installed by Northrop's consultant, Orion

1 Environmental, extracted 988 pounds of VOCs between October 2007 and June 2009. (TT  
2 5204:18-23, 5205:4-17.) Mr. Tofani admitted that contamination remains at the site within a  
3 perched groundwater zone at a depth of approximately 80 feet below ground surface (bgs). (TT  
4 5206:13-20.) Mr. Tofani confirmed that the release of PCE at the site caused contamination of  
5 the shallow groundwater aquifer. (TT 5208:16-18.) He testified that at least a portion of the  
6 PCE that was in groundwater before the soil vapor extraction system began would have made its  
7 way through the shallow groundwater aquifer and impacted that groundwater. (TT 5390:2-8.)

8 Mr. Tofani confirmed that the highest PCE level reflected in soil samples closest to the  
9 surface in the waste and storage area was 99,000 ug/kg (or 99 mg/kg), which he described as  
10 "pretty high," at a depth of 5 feet bgs in VM-20. (TT 5367:25-5368:21; TE 12596 at p. 20,  
11 figure 5.1.) Mr. Tofani confirmed that prior to remediation, at 11 to 25 feet bgs, the highest  
12 PCE levels were 5,100 ug/kg at 20 feet bgs in V-5 and 2,400 ug/kg at 20 feet bgs in VM-9. (TT  
13 5370:4-17; TE 12596 at p. 21, figure 5.2.) Mr. Tofani confirmed that going deeper into the  
14 subsurface in the drum storage area, the highest pre-remediation PCE level was 1,400 ug/kg at  
15 30 feet in VEW-1. (TT 5370:18-5371:5.) Mr. Tofani confirmed that at 51 to 75 feet below  
16 ground surface in the drum storage area, the highest PCE level detected was 1,700 ug/kg at 70  
17 feet bgs in VM-19. (TT 5371:6-16.) Mr. Tofani described the PCE level at 70 feet bgs: "It  
18 certainly indicates the presence of contamination, yes. I mean, I've seen much, much higher, but  
19 there's no question that those soils have been impacted by PCE." (TT 5371:17-22.) Mr. Tofani  
20 confirmed that the depth to perched groundwater at the site was on the order of perhaps 70 feet,  
21 so at some point in time, the perched water level would have been about the level where the  
22 1,700 ug/kg measurement was taken. (TT 5371:23-5372:6.)

23 Mr. Tofani testified that for Well MW1-95 in a perched zone at the Kester site, sampled  
24 at 95 feet bgs, the PCE concentration was 1,800-1,850 ug/L (or ppb) in October 2007, rising to  
25 2,300-2,400 ug/L. (TT 5385:18-5386:10, 5386:20-5388:18, 5389:1-5; TE 15713-2; TE 12596  
26 at p. 20.) Based on the first measurement of PCE at the site in October 2007, it is likely that  
27 PCE would have been in that perched water for some period of time prior to that measurement.  
28 (TT 5388:19-24, 5389:1-5.) The October 2007 sample should be representative of the PCE in

1 the groundwater. (TT 5389:13-18.)

2 Dr. Waddell testified that PCE was found in every sample at the Kester site, from  
3 shallow samples all the way down to groundwater. (TT 1200:7-11.) Dr. Waddell testified that  
4 solvents were released to the subsurface at the Kester site, and were detected in both soil and  
5 underlying groundwater associated with the site. (TT 1298:5-21.) Dr. Waddell testified that the  
6 direction of groundwater flow at the Kester site is generally east to west. (TT 1299:18-21.) Dr.  
7 Waddell testified that Kester is most directly upgradient of the Y-12 site. (TT 1299:22-25.)

8 Dr. Waddell testified that PCE was released at the site by Kester, and that PCE has  
9 migrated downward to depths of greater than 100 feet to groundwater, so that the Kester site  
10 contaminated the groundwater with PCE. (TT 1302:5-18.)

11 Dr. Waddell testified that based upon the soil gas data, 1,1,1,-TCA was released at the  
12 site. (TT 1313:26-1314:1.) Dr. Waddell testified that TCE and 1,1-DCE were detected at the  
13 site, with 1,1,-DCE being a breakdown product of 1,1,1,-TCA. (TT 1313:7-19.)

14 Mr. Tofani confirmed that perched groundwater can migrate or move: "[I]t's not going  
15 to sit there forever, if that's what you're asking." (TT 5373:4-9.) Mr. Tofani confirmed that  
16 perched groundwater can move laterally: "It can, if there's a reason for it to move laterally. If  
17 the clay layer upon which it's perched is tilted, it can move laterally, yes." (TT 5373:10-13.)  
18 It's also possible that perched groundwater was migrating downward. (TT 5390:9-13.)

19 Mr. Tofani confirmed that in the waste room area, the highest PCE concentration prior to  
20 remediation at greater than 75 feet bgs was 560 ug/kg at 90 feet. (TT 5373:25-5374:12; TE  
21 12596.) Mr. Tofani testified that what he referred to as the impermeable layer extends in the  
22 area from a depth of about 70 feet bgs down to about 110 feet bgs. (TT 5375:25-5376:3.) Mr.  
23 Tofani confirmed that the PCE detection at 90 feet means that the PCE went about 20 feet into  
24 what Mr. Tofani referred to as the impermeable layer. (TT 5376:4-6.) Mr. Tofani then clarified  
25 his reference to an impermeable layer: "If I called it impermeable before, nothing's really  
26 completely impermeable. So I didn't mean to imply that nothing would go through it." (TT  
27 5376:7-14.) Mr. Tofani testified that there is some transmission of water between the perched  
28 zone and the underlying shallow aquifer. (TT 5391:23-26.)

1 Mr. Tofani confirmed that Northrop had not received a closure letter with respect to  
2 groundwater at the Kester site, and that the Regional Board had not approved the method of  
3 remediating groundwater at the site proposed by Northrop's consultant. (TT 5377:1-15.)

4 Mr. Tofani characterized the Kester site as "probably towards that [complicated] end of  
5 the spectrum because of the soil conditions that exist there." (TT 5379:2-8.) He confirmed that  
6 the soil samples in the empty drum storage area at the Kester site "are middle of the road to  
7 maybe a little on the high side of what you usually see," and "there's no question there was a  
8 significant release in the empty drum storage area." (TT 5382:17-26.)

9 Dr. Waddell's testified that reductive dechlorination, within the underlying regional  
10 water table at depths of approximately 100 feet and greater, is not a significant process affecting  
11 the VOC's present at those depths. (TT 1318:15-1319:2.)

12 There is no evidence that Northrop or its consultants are trying to clean up the  
13 groundwater itself at the site, or to deal with the off-site plume associated with the site. (TT  
14 1335:17-24, 1338:17-24.)

15 Dr. Waddell's opinion is that the plume of PCE from the Kester site has moved beyond  
16 Extraction Well EW-3, but no monitoring data is available to determine how far. (TT 1339:15-  
17 20.) Dr. Waddell's opinion is that there is nothing that will prevent the continued movement of  
18 the PCE plume from the Kester site. (TT 1341:6-13.) Dr. Waddell testified that contamination  
19 at the Kester Solder site is a continuing source of PCE to groundwater.

20 Dr. Waddell analyzed Mr. Tofani's opinion that the Kester site was not a current  
21 contributing source to the shallow aquifer of PCE. (TT 7481:21-24, 7482:9-11.) Dr. Waddell's  
22 concluded that the Kester site is currently, and will be, a continuing source of PCE to the  
23 groundwater. (TT 7482:12-17, 7483:1-4.) Dr. Waddell bases his opinion on the following  
24 facts: The groundwater in the perched zone beneath the Kester site continues to be monitored;  
25 PCE concentrations in excess of 1,000 ppb have been measured in that groundwater recently;  
26 there is presently PCE contamination in the perched water; there continues to be contamination  
27 in the shallow groundwater beneath the site; the proportions of contaminants in the shallow  
28 aquifer differ markedly from those in the samples east or upgradient of the site, meaning that

1 there is no other site between the monitoring locations that has been identified as a source of the  
2 PCE; and the dominant contaminant is PCE, not TCE. (TT 7482:12-26, 7483:5-7484:2.)

3 The District has proven that Northrop at the Kester site has contaminated and threatens  
4 to further contaminate groundwater used as a drinking water resource, forcing the District to  
5 incur necessary response costs that the District is entitled to recover under the Orange County  
6 Water District Act and the HSAA.

# APPENDIX F

**APPENDIX F (NORTHROP EMD)**

Northrop Grumman Systems Corporation (NGSC) admits it owned the site at 500 East Orangethorpe (EMD) between 1952 and 1995. (TE 1047, at 2:2-3, 3:2-3 [Northrop's Orangethorpe Stipulation].) NGSC admits it occupied the EMD site between 1951 and 1989. (TE 1047, at 2:4-5, 3:4-5.) NGSC admits it used trichloroethene (TCE) in activities at the EMD site. (TE 1047, at 2:6-7, 3:6-7.) NGSC admits it used 1,1-dichloroethene (1,1-DCE) in activities at the EMD site. (TE 1047, at 2:8-9, 3:8-9.) NGSC admits it used 1,1,1-trichloroethane (1,1,1-TCA) in activities at the EMD site. (TE 1047, at 2:10-11, 3:10-11.) NGSC admits it released 1,1,1-trichloroethane (1,1,1-TCA) into the soil at EMD, to the extent there was a reported release in 1986. (TE 1047, at 2:12-13, 3:12-13.)

Northrop's expert Glenn Tofani testified that Northrop operated at the EMD site for 38 years, and used solvents for the vast majority – if not all – of those years. (TT 5445:16-22.) Mr. Tofani testified that solvents were released from the EMD facility while operated by Northrop. (TT 5445:23-5446:1.) Mr. Tofani testified that a release occurred in the anodic room, as well as releases of wastewater containing at least low concentrations of VOCs. (TT 5446:2-10.) Two degreasers were operated at the EMD site, one in the Y-1 building and the other in the Y-2 building. (TT 5446:11-16.) The Y-1 building housed the anodic room. (TT 5446:17-19.) Solvents were used in the degreaser in the anodic room. (TT 1644:23-24.)

Mr. Tofani testified that releases of TCE and TCA in the area of the Y-1 anodic room impacted the EMD site. (TT 5272:17-22.) Dr. Waddell testified that the 1,1,1-TCA release also released 1,1,-DCE through degradation. (TT 1642:8-12, 1706:15-25.) Dr. Waddell testified that the highest concentrations were in the Y-1 building, in the anodic room, near the anodic room, and in the anodic room sump that was part of the wastewater management system for the site. (TT 1643:10-20, 1667:9-14.) Dr. Waddell testified that releases in the Y-1 building also occurred in the printed wire board room and from a corroded sewer lateral pipe. (TT 1652:23-1653:12.) Shallow soils near the sewer lateral were found to contain 1,1,1,-TCA, TCE, and 1-1-DCE. (TT 1657:16-20, 1657:25-26.) Dr. Waddell testified that the degreaser in the Y-2 building was a release point for TCE and TCA. (TT 1659:26-1660:2, 1661:12-16.) Samples

1 near the Y-2 building degreaser found 1,1,-DCE, 1-1-1-TCA, and TCE. (TT 1662:19-21,  
2 1663:4-5, 1663:22-26.) TCE was found in soil gas samples in an area used for the storage of  
3 chemicals north of the Y-2 building. (TT 1664:9-11, 1664:22-25.) Mr. Tofani testified that  
4 even after Northrop's consultants conducted remediation, residual levels of VOCs remained in  
5 the soil. (TT 5280:11-14.)

6 Mr. Tofani testified that at the EMD site, Northrop used 1,1,1,-TCA as a solvent for  
7 approximately 11 years, and Northrop used TCE for roughly 36 years. (TT 5447:11-22.) To  
8 Mr. Tofani's knowledge, no groundwater sampling was conducted at the EMD site from 1993  
9 until 2010. (TT 5447:23-5448:8.)

10 Groundwater contamination occurred as a result of releases at the EMD site and was  
11 found in monitoring wells scattered throughout the site, in the northern half, in the southeastern  
12 corner, to the east, along the western edge, in the southern half, and west of the Y-1 building.  
13 (TT 1671:11-16, 1671:19-1672:10.) The release of 1,1,1,-TCA at the site has caused the  
14 concentrations of 1,1,-DCE to increase in groundwater at the site, and the 1,1,-DCE requires  
15 remediation. (TT 1683:4-6, 1683:20-22, 1697:15-18, 1700:8-12.) 1,1,-DCE left the property as  
16 a contaminant in groundwater and created an off-site plume. (TT 1692:26-1693:2.) TCE was  
17 released to groundwater at the site and requires remediation. (TT 1684:12-17, 1685:1-15.)  
18 Nothing would stop contaminants leaving this site from continuing to move with groundwater  
19 further to the west. (TT 1693:11-13.)

20 Mr. Tofani testified that the EMD site was excavated after or during closure to a  
21 maximum depth of approximately 40 feet for a portion of the site beneath the Y-1 building. (TT  
22 5450:8-12.) Mr. Tofani testified that most of the early soil samples collected at the EMD site  
23 prior to closure were taken at a depth of less than 10 feet. (TE 12581, at p. 16, Table 2; TT  
24 5448:9-5449:9.) In later sampling prior to closure three samples were taken at 60 feet or deeper,  
25 then later more samples were taken at greater depth. (TE 12581; TT 5450:13-5451:1.) As time  
26 went on, a greater percentage of samples were collected at greater depths. (TT 5451:2-13.)

27 Mr. Tofani testified that a soil sample collected at the EMD site prior to closure had TCE  
28 detected at a depth of 60 feet at 1,700 ug/kg (ppb), even though there were non-detects at several

1 sample points above it. (TT 5449:10-25.) A sample from VB-7 at a depth of 65 feet detected  
2 TCE at 3,300 ug/kg, and a sample from VB-8 at a depth of 60 feet detected TCE at 960 ppb and  
3 TCA at 150 ppb. (TT 5451:14-25.) For a number of the pre-closure samples that were taken at  
4 depths of 60 feet or greater, there were measurements of TCE and/or TCA in the hundreds of  
5 parts per billion, even though for many of those samples there were non-detects above the  
6 detects in the same well. (TT 5452:5-7, 5452:13-22.) The soil excavation did not do anything  
7 about the TCE and TCA that were at depths of 60 feet or greater. (TT 5453:3-9.)

8 The data for cis-1,2-DCE indicates that reductive dechlorination is not a significant  
9 process at the site. (TT 1695:10-12.) Biodegradation cannot be relied upon to break down the  
10 contaminants that Northrop contributed to groundwater at the site. (TT 1695:21-24.)

11 Dr. Waddell testified that contamination from the site would be captured by extraction  
12 wells EW-4, EW-3, and EW-3A. (TT 1707:26-1708:12.) The DCE and TCE contamination at  
13 the EMD site has commingled with the TCE, DCE, and PCE released at the Y-12 site. (TT  
14 1709:22-26, 1710:7-12.)

15 Dr. Waddell testified that the Laura Scudder's site is not the source of contamination at  
16 the EMD site. (TT 1686:19-20.) Up-gradient sources cannot account for the detections of TCA  
17 on Northrop's property. (TT 1690:8-10.)

18 The District has proven that Northrop at the EMD site has contaminated and threatens to  
19 further contaminate groundwater used as a drinking water resource, forcing the District to incur  
20 necessary response costs that the District is entitled to recover under the Orange County Water  
21 District Act and the HSAA.  
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# APPENDIX G

**APPENDIX G (NORTHROP Y-12)**

Northrop Grumman Systems Corporation (NGSC) admits it leased the site at 301 East Orangethorpe (the Y-12 site) between 1962 and 1992. (TE 1047, at 2:14-15, 3:14-15.) NGSC admits it owned the site at 301 East Orangethorpe between 1992 and 1995. (TE 1047, at 2:16-17, 3:16-17.) NGSC admits it occupied the site at 301 East Orangethorpe between 1962 and 1994. (TE 1047, at 2:18-19, 3:18-19.) NGSC admits it used trichloroethene (TCE) and 1,1,1-trichloroethane (1,1,1-TCA) in activities conducted on the property at 301 East Orangethorpe. (TE 1047, at 2:20-21, 3:20-21, 2:22-23, 3:22-23.) NGSC admits it used compounds containing methylene chloride in activities at 301 East Orangethorpe. (TE 1047, at 2:24-25, 3:24-25.)

NGSC expert Mr. Tofani also testified that Northrop used solvents in the production process at the Y-12 site from 1962 to 1994. (TT 5414:8-18.)

Mr. Tofani testified that there was one or more releases of TCE, TCA, and PCE in the area of the quench tank at the Y-12 site. (TT 5224:14-21.) Mr. Tofani testified that TCE released in the quench tank area is traceable to groundwater. (TT 5241:22-5242:1.) The quench tank area is labeled on Trial Exhibit 146, Figure 3. (TE 146; TT 5224:22-5225:8.) TCE was used to clean the quench tanks. (TT 1357:17-19, 1357:22-24, 1358:16-23.) The highest concentration of TCE near the quench tank was 340 ppb. (TT 1359:1-2.) Dr. Waddell testified that the 1,1,1,-TCA released at Y-12 degraded to create a subsequent release of 1,1,-DCE. (TT 1356:20-25, 1369:11-14.) Mr. Tofani testified that TCE and TCA were also released in the area of a vapor degreaser that was present in the building near the quench tank. (TT 5407:19-5408:7.) Dr. Waddell testified that contaminants released from the degreaser have reached groundwater. (TT 1410:24-1411:3.) Besides the TCE releases from the quench tank and the degreaser, TCE was also released from a hazardous waste storage area north of the building; on the west side of the building where a clarifier, water treatment system, and sewer lateral were located; and beneath the painting area. (TT 1359:3-8, 1359:18-20, 1360:11-17, 1363:9-11, 1364:2-6.) PCE was released from the quench tank; the degreaser; the hazardous waste storage area; the area along the west side used for sump tanks and water treatment; as well as the painting area; and PCE was released into waste lines that carried wastewater to the clarifier and

1 the treatment system, possibly from a sink in the laboratory that discharged into the wastewater  
2 treatment system. (TT 1364:24-1365:6, 1365:16-20, 1368:12-1369:1.) 1,1,1-TCA was released  
3 from the degreaser and the west side of the building, where the sump tanks and water treatment  
4 system were located. (TT 1366:18-1367:2, 1367:11-14.) Northrop's monitoring wells in the  
5 off-site direction have detected contaminants released from the site, including TCE, PCE, 1,1,-  
6 DCE, and 1,1,1,-TCA, as contaminating groundwater. (TT 1413:21-1414:4.)

7 Mr. Tofani testified that after the initial investigation at the site, additional investigation  
8 ordered by the Regional Board indicated there was soil contamination at the site that had not  
9 been discovered by the initial borings, and that groundwater impacted with TCE was migrating  
10 off of the site. (TT 5226:8-24.) Mr. Tofani testified that a soil vapor extraction system, which  
11 came online in August 2008 and is still operating at the site, has recovered just short of 20,000  
12 pounds of VOCs. (TT 5244:5-7, 5244:12-19.)

13 Mr. Tofani testified that TCE that originated at the quench tank migrated vertically  
14 downward, impacted the perched zone, and then from the perched zone seeped into and  
15 contaminated the shallow aquifer. (TT 5410:15-5411:21.) Mr. Tofani concluded that TCE  
16 made it from the perched groundwater into the shallow aquifer. (TT 5411:22-5412:8.) Mr.  
17 Tofani testified that the relatively impermeable layer beneath the quench tank is not entirely  
18 impermeable, so VOC-impacted water can and did move through the clay layer upon which the  
19 perched zone is perched and ultimately impact the shallow groundwater beneath it. (E.g., TT  
20 5412:10-5413:4.) Dr. Waddell testified that contamination dissolved in groundwater that is  
21 perched is a potential continuing source to groundwater underneath it. (TT 1444:13-16.)

22 Northrop's consultant, Dr. James Babcock, testified that TCE was detected in  
23 groundwater samples at the Y-12 site. (Babcock Depo. [2/20/09], at 7:15-20, 8:1-10, 66:10-16,  
24 69:7-17.) Dr. Babcock testified that the higher TCE results on the west side of the site and the  
25 lower TCE results on the east side of the site indicates "[t]hat there might be a contribution from  
26 the site." (Babcock Depo., at 71:23-72:4.) Dr. Babcock testified that TCE detected at 60 feet  
27 depth in CB-1, in the vicinity of the vapor degreaser, indicates "[t]hat contamination moved  
28 down that deep." (Babcock Depo., at 76:6-23.) Dr. Babcock testified that sampling results for

1 1,1,1,-TCA in NC-2I, in the vicinity of the vapor degreaser, indicate that "[t]he source is near  
2 the top." (Babcock Depo., at 80:13-81:11, 81:12-82:4.) Dr. Babcock testified that after getting  
3 enough samples and a track record of what was going on, noting the high TCE results in NMW-  
4 2 on the west side of the Y-12 facility, he concluded that there was "apparently some  
5 contribution from the Northrop facility" to groundwater contamination. (Babcock Depo., at  
6 109:1-11, 133:19-134:22.) Dr. Babcock testified, "Some of the Northrop contamination  
7 migrated off the site, yes." (Babcock Depo., at 136:22-137:3.)

8 Dr. Waddell testified that in monitoring wells at the Y-12 site, water levels installed in  
9 lower-permeability materials have water levels higher than in the underlying sandier materials,  
10 indicating that there is water at that depth. (TT 710:24-711:8.) At the Y-12 site, when water  
11 levels in the middle zone have gone up and down through time, similar changes have been  
12 measured in the wells that are installed in the finer grain material, showing there is an  
13 interconnection between the finer grain materials and the sandier, coarser-grained materials  
14 beneath. (TT 711:9-14.) This means that there is movement of water from the shallower  
15 materials to the deeper materials. (TT 711:17-25.)

16 Dr. Waddell testified that in some borings at the Y-12 site, PCE and TCE were detected  
17 in every sample. (TT 1200:4-17.) Dr. Waddell testified that the plume from the Y-12 site has  
18 commingled with the plume from the Kester Solder site. (TT 1408:14-25.)

19 Mr. Tofani confirmed that the initial advanced oxidation system installed by Northrop's  
20 consultant created bromate contamination. (TT 5252:17-5253:18.) The District had commented  
21 to the Regional Board that Northrop's proposed treatment might produce bromate, which Mr.  
22 Tofani agreed was a possibility. (TT 5254:19-5255:5.) The bromate contamination was not  
23 discovered in the circulation well, but was instead discovered by bromate detections in  
24 downgradient monitoring wells, then by further sampling in the circulation well that was  
25 analyzed by another lab. (TT 5255:6-5256:11.) Mr. Tofani concluded that the initial analytical  
26 lab had been incorrectly reporting that bromate was not present in the effluent water from the  
27 circulation well when bromate was, in fact, present. (TT 5256:12-20, 5257:3-4.) The bromate  
28 that was generated has migrated downgradient and not fully dissipated. (TT 5257:20-23.)

1 Mr. Tofani admitted that the single recirculation "well does not capture all of the  
2 contamination that's currently coming off of the Y-12 site." (TT 5366:15-22.) Mr. Tofani  
3 admitted that there are points on the western perimeter of the Y-12 site where contamination is  
4 flowing off-site and it is not being captured by the recirculation well. (TT 5367:5-8.)

5 Mr. Tofani testified that the first sampling for PCE in shallow groundwater upgradient of  
6 the Y-12 site was in 2007. (TT 5394:25-5395:3.)

7 Mr. Tofani testified that no remediation activities took place at the Y-12 site from 1994  
8 until 2006, when pilot testing began. (TT 5414:19-23.) Mr. Tofani testified that VOCs were  
9 detected the first time that they were sampled at the Y-12 site, in 1994-1995. (TT 5414:24-  
10 5415:6.) Mr. Tofani testified that the initial interpretation was that the concentrations were so  
11 low that no significant soil contamination was present, which missed something, because  
12 significant contamination was later found. (TT 5414:24-5415:16.) It became apparent that there  
13 was groundwater contamination, and that the Y-12 site was contributing to that groundwater  
14 contamination, which led to the conclusion that the initial interpretation – that there was not  
15 significant soil contamination – was wrong. (TT 5415:17-5416:2.) Groundwater contamination  
16 was discovered at the site in approximately 1995. (TT 5416:3-6.) After the 1995 discovery of  
17 groundwater contamination, it took 11 years before the first steps were taken to remove any  
18 VOC's from that groundwater. (TT 5416:7-12.) Mr. Tofani testified that the Y-12 site was  
19 contributing to groundwater contamination during those 11 years, and the site had likely been  
20 contributing contamination to groundwater since before that time. (TT 5416:13-19.)

21 Mr. Tofani testified that the Regional Board issued a Cleanup and Abatement Order  
22 (CAO) for the Y-12 site. (TT 5418:12-15.) The Regional Board may issue a CAO if there is a  
23 lack of cooperation on the part of the responsible party, or if the case is not progressing at a rate  
24 that is acceptable to the Board. (TT 5418:7-11.) At the Y-12 site, the disagreement that led to  
25 the issuance of the CAO is that the Regional Board wanted additional wells installed to delineate  
26 the plume, and Northrop's consultant proposed hydropunch samples rather than monitoring  
27 wells. (TT 5418:16-25, 5419:21-5420:4.)

28 Mr. Tofani testified that the ozone peroxide treatment system being used for remediation,

1 in which the treatment system is housed below ground inside the well casing, has not been used  
2 at other sites. (TT 5431:4-5432:10, 5444:6-5445:9.) The UV peroxide treatment system has  
3 been operated for less than a year. (TT 5445:10-13.)

4 Dr. Waddell testified that PCE found at a nearby plating facility could not be responsible  
5 for PCE found on the Northrop property. (TT 1372:18-22.) Dr. Waddell's opinion is that  
6 contamination observed in the soil samples from Aero Scientific came from the Y-12 site, not  
7 from Aero Scientific. (TT 1376:2-4, 1383:12-14.)

8 Dr. Waddell testified that the plume that has left the Y-12 site is not being cleaned up.  
9 (TT 1438:16-22.) There is nothing that would physically stop continued movement of  
10 chemicals dissolved in groundwater at the Y-12 site from moving further with groundwater  
11 away from the site. (TT 1415:16-20, 1438:23-25.) Dr. Waddell's opinion is that the plume has  
12 not stabilized and will not stop moving, and in fact the plume continues to migrate  
13 downgradient. (TT 1438:26-1439:10.) There is no evidence of biodegradation concerning the  
14 groundwater plume coming from the site. (TT 1415:5-15.)

15 Dr. Waddell testified that Extraction Well EW-3 will capture contamination from the Y-  
16 12 site. (TT 1433:25-1434:3.) Extraction Well EW-3A will capture contamination that has  
17 moved deeper in the system and beyond EW-3. (TT 1434:4-13.) Both the EMD site and the Y-  
18 12 site contribute contaminants to Extraction Well EW-3A. (TT 1435:15-22.)

19 The District has proven that Northrop at the Y-12 site has contaminated and threatens to  
20 further contaminate groundwater used as a drinking water resource, forcing the District to incur  
21 necessary response costs that the District is entitled to recover under the Orange County Water  
22 District Act and the HSAA.

1 Re: *Orange County Water District v. Northrop Corporation, et al.*  
2 Case No. 04CC00715

3 **PROOF OF SERVICE VIA LEXISNEXIS FILE AND SERVE**

4 I am a citizen of the United States and an employee in the County of Sacramento. I am  
5 over the age of eighteen (18) years and not a party to this action. My business address is:  
6 MILLER, AXLINE & SAWYER, A Professional Corporation, 1050 Fulton Avenue, Suite 100,  
7 Sacramento, CA 95825-4225.

8 On the date executed below, I electronically served the document(s) described below via  
9 LexisNexis File & Serve, on the recipients designated on the Transaction Receipt located on the  
10 LexisNexis File & Serve website:

11 **PLAINTIFF ORANGE COUNTY WATER DISTRICT'S PROPOSED**  
12 **STATEMENT OF DECISION**

13 I declare under penalty of perjury under the laws of the State of California that I  
14 electronically served a true and correct copy of the above document(s) via LexisNexis File &  
15 Serve on September 6, 2012.

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KATHY HERRON